

**THE FUNDABILITY AND MARKETABILITY  
OF GREEN BUILDINGS AT PUBLIC UNIVERSITIES:  
TRANSCENDING THE FUNDING PARADIGM AT CAL POLY**

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presented to  
the Faculty of California Polytechnic State University,  
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**In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science in Architecture**

**by  
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## **ABSTRACT**

### **The Fundability and Marketability of Green Buildings at Public Universities Transcending the Funding Paradigm at Cal Poly**

**Eileen E. Joseph**

While in recent years Cal Poly has moved in the direction of sustainable building, my research indicates that where other CSU's have succeeded, Cal Poly has been challenged in developing the type of green buildings that would truly make new construction projects more sustainable. The most commonly cited barriers are cost and lack of funding. The outcome however (as evidenced by other CSU's) is not just driven by the state's capital outlay process that has historically supported new construction on CSU campuses. It is determined by the priorities, perceptions and values that have influenced Cal Poly's decision makers and driven campus practices.

The purpose of this study is to develop an understanding of and solution for the barriers to green buildings on the Cal Poly campus that can be used as a model for other universities. Using a qualitative analysis supported by interviews, case studies, literature and policy review, and industry reports, I identify and examine the elements of the funding paradigm beyond the traditional funding mechanisms for capital projects within the CSU to propose a solution for Cal Poly. This includes exposing the perceptions about the cost of green construction (and LEED™ certification) and identifying cost reduction strategies; addressing the university's leadership, values and organization around sustainability priorities, including the need to approach building projects more holistically; examining the university's ability to capitalize on alternative resources; and, finally, presenting a theory on the marketability of green construction, including use of LEED™ as a fundraising tool. If adopted, I posit that Cal Poly can (and should) transform the funding paradigm to adopt a sustainability paradigm in support of higher performing, green buildings.

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# **Chapter One**

## **Introduction**

An increasing number of institutions of higher education worldwide recognize the impact that university and college campuses, eco-systems unto themselves, have on the environment and the critical role each can play in protecting it. As consumers, as vital economic players and as those who are educating tomorrow's leaders, universities are tackling the issue of sustainability on multiple fronts. Recognizing their unique leadership potential, many institutions of higher learning have implemented campus sustainability initiatives, affecting everything from infrastructure to academics, all with varying degrees of success.

This study will look at just one area of sustainability on college campuses – new construction of buildings. Buildings completed or planned between 2004 and 2009 form the basis of the study. The science of green building, the practice of increasing the efficiency of buildings by looking at how we use resources such as energy, water, and materials, has taken root in architectural education and practice. As standards such as the United States Green Building Council's Leadership in Energy and Environmental Design (LEED™) evolve and cost benefit analyses identify both short and long term benefits, the case for sustainable building continues to be made. This has had a significant impact on the growth of green building in the corporate, residential, institutional, and government sectors. Academic institutions, often driven by their students, are leading the way. Is Cal Poly a part of that story?

### **The Problem**

California Polytechnic State University (Cal Poly) is a nationally ranked, four-year, comprehensive public university located in San Luis Obispo, California. Located roughly half-way between San Francisco and Los Angeles, Cal Poly's total acreage is 9,678, making it one of the largest land-holding universities in the nation.<sup>1</sup> As of February 2009, Cal Poly's building inventory totaled 5,734,694 gross square feet.<sup>2</sup> Approximately 1.5 million square feet, or 26 percent of completed buildings, are new construction.<sup>3</sup> This represents a significant carbon footprint.

With San Luis Obispo's temperate weather and low number of heating and cooling degree-days a year<sup>4</sup>, the university sits in a climatic zone that is ideally situated for sustainable design. In addition, the university has access to experienced professionals, intellectual capital, research and applied knowledge (not to mention future generations of decision makers committed to a "Learn

by Doing” motto) that greatly heightens its ability to provide leadership and solutions for sustainable practices.

On April 23, 2004, Cal Poly President Dr. Warren Baker signed the Talloires Declaration, an action plan “committing universities to sustainability and environmental literacy in teaching and practice.”<sup>5</sup> On the issue of sustainability, President Baker recognizes that “As a polytechnic university, it is at the core of our mission to examine the ways in which knowledge may be applied to improve society, manage scarce resources and protect and preserve our environment. Sustainability is a high priority for the university and a key issue that should cut across all we do, including teaching, research and the practices we engage in on the campus.”<sup>6</sup> The creation of a Sustainability Advisory Committee followed in 2004, with the naming of a “Sustainability Coordinator” in 2005. This public declaration, made during a time of increased environmental awareness, personifies both an educational tradition and practical integration of sustainable solutions on the Cal Poly campus.

How has this propensity for sustainability impacted the Cal Poly building environment? At the onset of my study, I observed a significant amount of new facility development on the Cal Poly campus, with only one project pursuing a LEED™ certification, a benchmark for green building. There were also many anecdotal stories from university colleagues that relayed a common sense of frustration of wasted opportunities when trying to integrate green features into new facilities. Was Cal Poly slow to adopt green building design? If so, why?

Through my initial research, I identified two important trends. The first is that the university has, in recent years, moved toward more sustainable building practices. The second is that funding shortfalls are the most commonly cited barrier to integrating the high performance features that would truly make Cal Poly’s new buildings more sustainable. Like many educational institutions, Cal Poly experiences antagonistic forces between a value of sustainability and economic and organizational realities. While there has been an emerging consensus that green buildings pay back in savings over time, who pays for green building design and construction?

### *Problem Statement*

While Cal Poly may have turned a corner in green design for new construction projects on campus, the costs of implementing high performance features and pursuing LEED™ certification remains an obstacle. The purpose of this study is to develop an understanding of and solution for the funding paradigm that influences green building at Cal Poly. If a paradigm is “a set of assumptions, concepts, values, and practices that constitutes a way of viewing reality for the community that shares them,”<sup>7</sup> then the funding paradigm will be defined not just as the funding

model for capital projects at Cal Poly, but the institutional practices, perceptions and values that influence funding decisions on green building at Cal Poly. Using a qualitative analysis supported by interviews, case studies, literature and policy review, and industry reports, I will develop a theory on the fundability and marketability of sustainable buildings in public universities, resulting in a proposal to shift the funding paradigm to a sustainability paradigm for Cal Poly in support of green buildings.

#### *Hypothesis*

Can Cal Poly transcend the traditional funding paradigm to consistently integrate higher levels of sustainability into building design? The hypothesis is that Cal Poly can and should capitalize on its academic and leadership assets to develop a funding model that will assure the university can achieve its vision of sustainability in building and do so within realistic budgeting constraints. This model will seek solutions to transcend the traditional barriers of the state funding formula while capturing the “marketability of sustainability” among not only the constituents that support Cal Poly, but outside donors and potential partners. The proposed outcome of this thesis is a theory that can be applied to future capital projects at Cal Poly and campuses throughout the California State University System (CSU).

#### *Thesis Addressed Issues*

As state funding for higher education continues to decline, and the institutional responsibility to reduce greenhouse gases becomes more of an imperative, it is essential that the underlying elements that influence the feasibility of green building are understood and overcome. This thesis will explore:

- The benefits of green building and why it is important to universities
- The State and CSU funding model for capital projects and how it supports and does not support sustainable construction
- The State, CSU, and Cal Poly policies and practices that drive green building
- The key elements of the state funding paradigm and the barriers and solutions to green building
- The marketability of green buildings and the exploration of LEED™ as a capital fundraising tool
- A theory to be applied to future capital projects and, possibly, as a model for other public universities

This thesis will not cover the broader issues of sustainability, or the admirable efforts around sustainability on Cal Poly’s campus outside the scope of green building. Though ultimately a greater issue, the study does not include existing buildings, only new construction. While the theory to transform the funding paradigm includes alternative funding mechanisms and an assessment of the marketability of sustainability and LEED™, it should not be seen as either a

fundraising or marketing plan, nor is it promoting LEED™ as the benchmark for what makes a building green.

### *Terminology*

There are a number of terms used throughout this thesis, some interchangeably, that require definition. This includes:

**Sustainability:** According to the Merriam Webster's Online Dictionary, sustainability is "of, relating to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged."<sup>8</sup> A more commonly accepted definition of sustainability, created in 1987 at the World Commission on Environment and Development (the Brundtland Commission) is, "development that meets the needs of the present without compromising the ability of future generations to meet their own."<sup>9</sup>

**Green Building:** This document uses the terms green, sustainable, and high performance to describe buildings that are designed and constructed with site, construction waste, energy, materials, indoor air quality, occupants, and the natural environment in mind. Phrases such as higher performing, higher levels of sustainability, green, LEED™ Gold or Platinum equivalent infer that buildings have established higher goals of building performance and are moving in the direction of carbon neutral.

**Carbon Neutral:** Carbon neutral and net zero, in this thesis, refers to buildings that offset greenhouse gas emissions through building design to, in effect, achieve net zero carbon emissions.

**Carbon Footprint:** The term "carbon footprint" as defined by the Global Footprint Network, is the amount of carbon being emitted by an activity or organization.<sup>10</sup>

**USGBC and LEED™:** The United States Green Building Council (USGBC) is a national non-profit entity whose mission is "to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life."<sup>11</sup> The USGBC developed the Leadership in Energy and Environmental Design (LEED™) Green Building Rating System, as a voluntary, consensus-based national rating system that measures how well a building or community performs across a number of sustainable metrics. LEED™ Version 3.0, released on April 27, 2009, measures: Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, Indoor

Environmental Quality, Locations & Linkages, Awareness & Education, Innovation in Design, and Regional Priority.<sup>12</sup>

LEED™ utilizes a point system that gives credits for potential building performance. These points are then tallied to determine the appropriate level of LEED™ certification, Certified, Silver, Gold, and Platinum. While most of the LEED™ buildings referenced in this study were rated against earlier versions of LEED™, Version 3 points are categorized as follows.



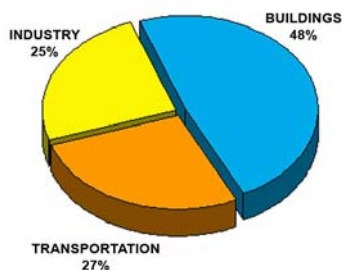
Figure 1-1. LEED™ 3 Rating System<sup>13</sup>

Institutions of Higher Education: Other terms used to describe institutions of higher learning include colleges and universities, campuses, schools, and institutions of higher learning. Cal Poly refers to Cal Poly, San Luis Obispo unless otherwise indicated.

## Chapter 2

### Why Green Building Pays

Buildings account for a significant amount of greenhouse gas emissions in the United States. According to *Greening America's Schools*, the United States is responsible for approximately 25 percent of global greenhouse gas (GHG) emissions and that over 40 percent of GHG can be attributed to the building sector – “more than any other entire economy in the world except China.”<sup>14</sup> Citing data from the U.S. Energy Information Administration, Architecture 2030 claims that buildings account for almost half (48 percent) of all energy consumption and GHG emissions annually in the U.S..<sup>15</sup>



**Figure 2-1. U.S. Energy Consumption**<sup>16</sup>

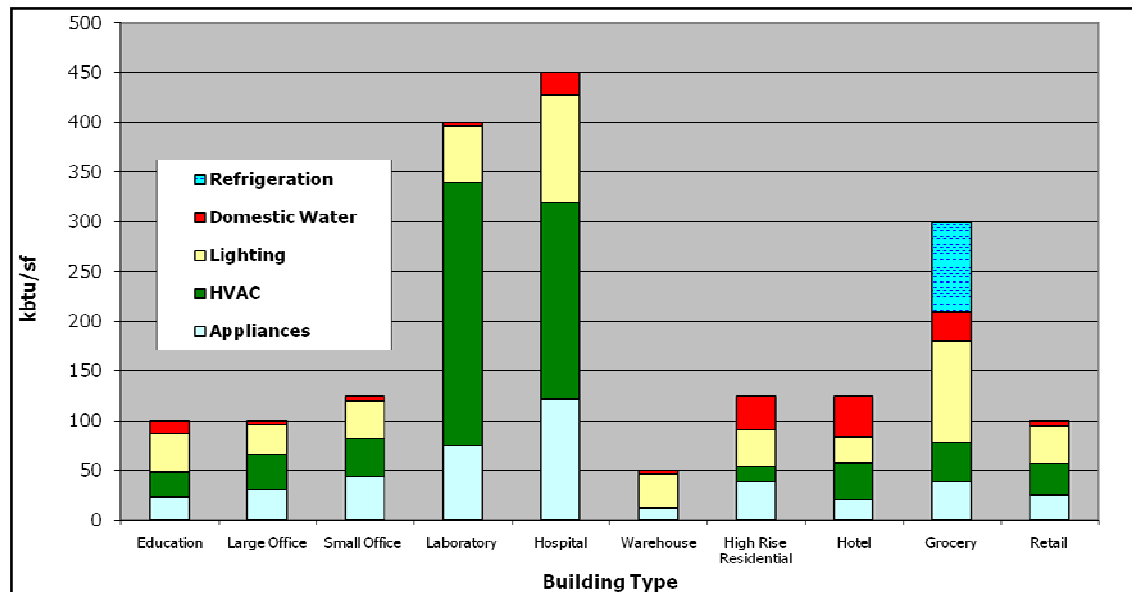
According to the United States Green Building Council (USGBC) buildings in the U.S. are responsible for:<sup>17</sup>

- 72% of electricity consumption,
- 39% of energy use,
- 38% of all carbon dioxide (CO<sub>2</sub>) emissions,
- 40% of raw materials use,
- 30% of waste output (136 million tons annually), and
- 14% of potable water consumption.

In addition, buildings use 40 percent of raw materials globally (3 billion tons annually)<sup>18</sup> and produce roughly 136 million tons of building-related debris from construction and demolition in the U.S. a year.<sup>19</sup> The USGBC predicts that, in the next 25 years, emissions from buildings will grow faster than any other sector.<sup>20</sup>

A typical university campus consists of a variety of building types, including classroom, labs, offices, health facilities, warehouses, residential, retail, and food. At a presentation at the 2008 UC/CSU/CCC Sustainability Conference, Bill Star and Ardie Dehghani of the University of

California, Davis presented their findings on building energy and emissions at UC Davis based on building type. While laboratory and hospital spaces represent the largest energy consumption by far, dorms, classrooms, and faculty offices consume significant energy as well.



**Table 2-1. Energy Intensity and End Uses in Various Building Types<sup>21</sup>**

With over 4,000<sup>22</sup> colleges and universities in the United States alone, and millions of square feet of existing and planned infrastructure, high performance buildings could make a significant difference in the reduction of energy and resource consumption in the U.S. while creating safer, healthier, and more productive learning environments. By incorporating things like more efficient lighting and advanced lighting controls, greater use of natural light, low-flow toilets, low energy heating and cooling systems, recycled or reused materials over raw materials, reduced construction waste, and better insulated walls and roofs, green campus buildings can result in at least 30 percent energy savings, 30-50 percent water savings, a 35 percent reduction in carbon emissions, and a 50-90 percent reduction in construction waste and waste generation from building operations.<sup>23</sup>

The very size of campus communities can pose both a problem and an opportunity. For large state universities, change can be slow. Funding may be tight. Yet an investment in high performance buildings will save on costs for the lifespan of that building. As educational buildings tend to be long-lived, governments and universities should take a longer term perspective on buildings by integrating life cycle costs over the life of the building.<sup>24</sup> In other words, these institutions need to make an investment in high performance buildings. In addition, institutes of higher learning have an unparalleled opportunity to educate future leaders on how to live more sustainably. Each building becomes a part of the learning process. As described by the editors



of *Sustainability on Campus: Stories and Strategies for Change*, "The sheer scale of higher education makes change difficult, and yet this is also what makes it so important."<sup>25</sup> A university's green buildings are a tangible expression of a value in sustainability. The good news is that green buildings, as this chapter will illustrate, have already proven to provide benefits.

### **Doing our Part: The Case for High Performance Buildings**

In simple terms, our carbon footprint is the impact our activities have on climate change. It is measured in the amount of greenhouse gases produced in our daily lives through the burning of fossil fuels for such things like electricity, heating and transportation.<sup>26</sup> High performance buildings are one way to reduce our carbon footprint.

As one of the country's largest polluters per capita, California, under government direction, has been on the leading edge of fighting for GHG reduction. In 2000, the Governor signed Executive Order S-20-04 to reduce the energy consumption and waste of state-owned facilities. At the time, the state's buildings, including the University of California, California State University, and Community College campuses, consumed over \$500 million of electricity per year. The order projected more than \$100 million per year in tax dollar savings.<sup>27</sup> Recognizing the consequences of global warming to the State of California, Governor Schwarzenegger's Executive Order S-3-05 called for the reduction of GHG to 2000 levels by 2010, to 1990 levels by 2020; and to 80 percent below 1990 levels by 2050.<sup>28</sup> In 2006, Schwarzenegger signed AB 32 requiring a reduction of California's greenhouse gas emissions by 25 percent by 2020. "Because of California's massive and growing economy," said the Governor, "the state is the 12<sup>th</sup> largest emitter of carbon in the world despite leading the nation in energy efficiency standards and lead role in protecting its environment."<sup>29</sup>

Higher education in California accounts for a large portion of the state's energy costs and emissions. The University of California's 10 campuses and The California State University's 23 campuses account for 47 percent of the state's property and initiate about \$200 million in state-funded construction and renovation projects every year.<sup>30</sup> This number does not include capital projects that are privately funded or supported by auxiliaries such as the campus housing authority. Cal Poly, San Luis Obispo is the second largest land-holding university in California, second only to UC Berkeley, and one of the largest land-holding universities in the nation.<sup>31</sup> As of February 2009, Cal Poly's building infrastructure totaled 5,734,694 gross square feet.<sup>32</sup> Approximately 1.5 million square feet, or 26 percent, are new construction.<sup>33</sup> In 2006, The California State University (CSU) joined the California Climate Action Registry (CCAR), a

voluntary program aimed at reducing GHG emissions.<sup>34</sup> Table 2-2 is a summary of total annual emissions tabulated in 2006 for the CSU system.

CO <sub>2</sub> Emission Sources	CO <sub>2</sub> Emissions (Tonnes)	Percent of Total
<b>Direct Emissions</b>		
Stationary Combustion Sources	184,908	43 %
Mobile Sources	16,913	4 %
<b>Indirect Emissions</b>		
Purchased Power and Steam	288,675	53 %
<b>Total Emissions:</b>	<b>430,495</b>	<b>100 %</b>
Note: Emission values do not sum to total due to rounding.		

**Table 2-2. CSU Greenhouse Gas Emissions 2006<sup>35</sup>**

While this table indicates emissions from all campus operations, the bottom line is that greener buildings on Cal Poly's campus – and all campuses - will make a significant difference in reducing carbon emissions. The utter size and scope of California's state owned infrastructure demands policies that reduce building emissions. Policies and practices at the university level represent a commitment not only to the campus community, but the surrounding ecosystem.

### **Economic Benefits of High Performance Buildings**

High performance buildings have tangible economic benefits. A well-designed green building reduces maintenance and operating costs. In fact, green buildings generally use 50 – 75 percent less energy than conventional construction.<sup>36</sup> In *Greening America's Schools*, Greg Kats analyzed the cost and benefits of green K-12 schools. The study found that on average, green schools used 33 percent less energy than conventionally designed schools, resulting in a direct reduction in energy costs<sup>37</sup> As evidenced in Table 2-3, Kats quantifies the financial benefits that come from building green. Savings in reduced energy, water, and waste coupled with lower operations and maintenance costs were “over ten times the average initial investment required to design and construct a green building. Energy savings alone exceed the average increased cost associated with building green.”<sup>38</sup> Kats also highlighted the significance of the additional benefits of green schools including “reduced teacher sick days, reduced operations and maintenance costs, and reduced insured and uninsured risks.”<sup>39</sup>

Category	20-year NPV
Energy Value	\$5.79
Emissions Value	\$1.18
Water Value	\$0.51
Waste Value (construction only) - 1 year	\$0.03
Commissioning O&M Value	\$8.47
Productivity and Health Value (Certified and Silver)	\$36.89
Productivity and Health Value (Gold and Platinum)	\$55.33
Less Green Cost Premium	(\$4.00)
<b>Total 20-year NPV (Certified and Silver)</b>	<b>\$48.87</b>
<b>Total 20-year NPV (Gold and Platinum)</b>	<b>\$67.31</b>

*Source: Capital E Analysis*

**Table 2-3. Financial Benefits of Green Buildings<sup>40</sup>**

The CSU recognizes the cost savings of sustainable practices and has established goals to reduce energy on both existing and new construction. The *2005 CSU Report on Sustainability and Energy Efficiency Goals* states that, "The starting point for sustainability is in the initial conception and design of buildings and facilities. Retrofits, though often quite beneficial, are usually less cost-effective than getting it right in the initial design and construction of buildings and facilities."<sup>41</sup> The CSU reported financial savings of \$41 million between 2000 and 2005 as a result of energy conservation measures.<sup>42</sup>

One of the challenges to green building, which will be discussed in greater detail in Chapter Five, is the fear of upfront costs due primarily to energy saving technology and mechanical systems. Many studies show, however, that upfront costs pay dividends. In addition, some design decisions made to conserve energy and reduce waste actually save the project money. Says Kats, "the increased cost of green design is typically partially offset by savings elsewhere, for example in reduced cost of HVAC systems or in reduced code compliance costs."<sup>43</sup> Landscaping costs can also be significantly reduced by utilizing sustainable strategies, such as maintaining existing vegetation or xeriscaping which uses less water. One project reduced capital costs for construction 60 percent by avoiding landscaping and impervious road surfaces.<sup>44</sup>

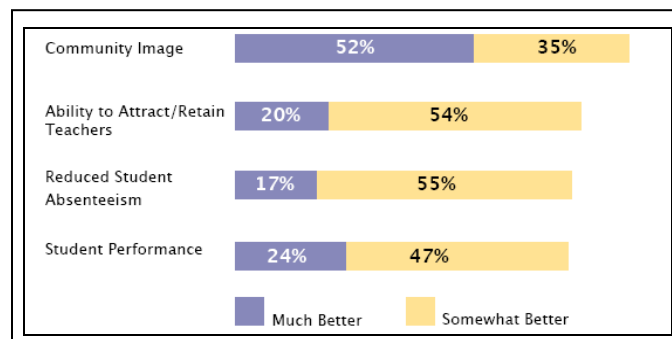
### **Health and Productivity Benefits of High Performance Buildings**

The E.P.A. has ranked indoor air pollution as "one of five top environmental threats to human health."<sup>45</sup> The agency points to a growing body of scientific evidence that indicates that indoor air "can be more seriously polluted than the outdoor air in even the largest and most industrialized cities."<sup>46</sup> Indoor air pollutant levels may be 2 – 5 times higher than outdoor levels."<sup>47</sup> The potential damage is compounded by the fact that people spend approximately 90 percent of their time indoors.<sup>48</sup>

Green building practices such as efficient lighting, use of natural daylight, effective ventilation, and use of non-toxic materials have been known to increase employee health and well-being, thereby reducing absenteeism. A Lawrence Berkeley National Laboratory study found that basic improvements to indoor environments has measurable health impacts including a reduction in health care costs due to less incidences of communicable respiratory diseases, allergies, and asthma. The researchers projected annual savings from \$17 to \$48 billion in lost work and health care costs in the U.S.<sup>49</sup> The USGBC estimates nationwide savings from improved worker productivity to be \$20 to \$160 billion.<sup>50</sup>

The U.S. Department of Energy and the Rocky Mountain Institute conducted a case study of companies that took measures to increase the energy efficiency of their buildings, and inadvertently increased worker productivity. The studies proved that energy efficiency measures did more than help the bottom line, it “measurably increased worker productivity, decreased absenteeism, and/or improved the quality of work performed.”<sup>51</sup> William Browning of the Rocky Mountain Institute estimates an increase of occupant performance of between 6 and 26 percent.<sup>52</sup> “Because most businesses spend much more on wages than on energy efficiency, incremental increases in worker productivity can produce savings in excess of total energy costs.”<sup>53</sup>

In his examination of the benefits of green K-12 schools, Greg Kats notes the costs of poor indoor environmental and air quality in schools, including higher absenteeism and increased respiratory ailments, lower teacher and staff, productivity, and lower student motivation.<sup>54</sup> By utilizing data from green schools, Kats predicts improvements in all of these areas, based on the attributes of green buildings. Figure 2-1 illustrates the views on green school performance compared to conventional schools of executives polled by Turner Construction in 2005.



**Figure 2-2. Benefits of Green K-12 Schools<sup>55</sup>**

The results of these studies readily translate to institutes of higher learning.

## **Educational Value of High Performance Buildings**

Green buildings are not only a tangible demonstration of a commitment to sustainability; they serve as an educational tool for all who occupy them. In the *Greening of Bren Hall*, the authors aptly observe,

Architecture holds a mirror before society: Design interprets our values, reassesses our priorities, and reflects them back to us. Sustainable design can embody ideas about environmental responsibility, inspiring and educating its users.<sup>56</sup>

Scott McNall of Chico State believes that green building sends the message that the university is a good steward of the environment. “Green,” says McNall, “is a value added for students, the community, and donors. Anytime anyone can learn from a building it adds value.”<sup>57</sup> CSU student leaders recognized this opportunity in their “Resolution in Support of a CSU Sustainability Policy.”

Our universities are a training ground for future leaders, a laboratory for cutting edge research, a place to develop solutions to our biggest challenges, an economic engine for the region, and taken together have a tremendous influence over environmental, economic, and social policies in the country.<sup>58</sup>

At Cal Poly, where “learn by doing” remains the campus motto, well-marked placards, as now found in the College of Science and Mathematics faculty offices, offer a simple way to educate on the practical methods of greening a building and its benefits. Of course, it is the experience of the occupants of green buildings that offer the greatest lessons - a tangible living experiment.

## **Environmental Concerns**

An investment in green building is an investment in healthy buildings. Incidences of “sick building” lawsuits have risen in the commerce and industry, where employee illnesses were attributed to substances like mold and asbestos in the workplace. As a state operated facility, the state assumes that liability and addresses these concerns head on. The larger issue for universities is around the issue of environmental degradation on surrounding areas, and the potential of mitigating costs.

When the CSU decided to build a new campus on a portion of the former Fort Ord military base in Monterey, it triggered an environmental chain reaction that went to the California Supreme Court. In accordance with the California Environmental Quality Act (CEQA), the CSU completed a campus master plan and an Environmental Impact Report which indicated significant impact on the surrounding community. This included off-campus traffic, water, sewage and fire safety protection. The CSU adopted what is called a “Statement of Overriding Considerations” (Public

Resources Code section 21081), stating that “overriding social, cultural and economic reasons supported approving the project notwithstanding its significant effects on the environment.”<sup>59</sup> The City of Marina challenged the CSU’s approval and the court ordered the CSU to “either adopt sufficient mitigation measures and/or to adopt findings that committed CSU to pay for its fair share of the expenses associated with off-campus infrastructure improvements necessary to mitigate the environmental impacts of the new campus.”<sup>60</sup> While the appellate court reversed the decision, the California Supreme Court in *The City of Marina et al. v. Board of Trustees of the California State University* (July 31, 2006), “reaffirmed the requirement for mitigation of all significant environmental impacts, when feasible.”<sup>61</sup>

An expanding infrastructure, even if sustainably built, will not reduce overall emissions, nor will it mitigate the impact of increased activities such as transportation and additional population that may affect a community. Green buildings do, however, offer better protection against environmental degradation. In addition, green buildings, especially if designed beyond current mandate levels will inevitably save costs in the future when regulations may change.

### **Marketability Benefits**

When a massive franchise such as Wal-Mart professes a goal to reduce its “carbon footprint” over the next seven years, one can’t help but take notice.<sup>62</sup> Whether it is the celebrity spokespeople, natural disasters, or the overall media coverage, there is a growing awareness of sustainability that can arguably translate to the potential marketing benefits of sustainable practices. Says Jerry Yudelson, “Developers, large corporations, universities, schools, local government and building owners have long recognized the marketing and public relations benefits (including branding) of a demonstrated concern for the environment.”<sup>63</sup> Does it matter to students?

In a survey conducted by The Princeton Review in 2008, 63 percent of the 10,300 college students who responded said they would value having information about a college's commitment to the environment. Of that group, 24 percent said such information would “strongly” or “very much” impact their decision to apply to or attend the school.<sup>64</sup> In a separate survey, The Princeton Review found that 66 percent of high school students value information on a college’s environmental commitment and that, for nearly 25 percent of them; it would affect their college decision.<sup>65</sup> The Princeton Review has now added environmental ratings of American colleges and universities. Kaplan has also added an environmental ranking and Peterson's and U.S. News & World Report will soon follow suit.<sup>66</sup> Says Robert Franek, Vice President and Publisher at The Princeton Review, “The green movement on college campuses is far more than an Earth Day recycling project or a dining hall menu of organic food. The commitment that many colleges and

their student bodies have made to environmental issues—indeed, to the environment—in their practices, use of resources, and academic and research programs is truly compelling.”<sup>67</sup>

A recent JWT survey reveals that today’s youth are significantly aware of environmental issues, even more so since the devastation of Hurricane Katrina. In a random online sampling of 767 U.S. teens: <sup>68</sup>

- Over 80 percent of American teens are bothered by the fact that the U.S. represents one of the world's leading sources of pollution – and more than half (54 percent) are strongly bothered by it.
- 61 percent actively agree that their generation will be more environmentally responsible than older generations
- 78 percent believe there is still time to repair the damage already done to the environment.
- 75 percent say they know more about environmental issues than they did a year ago and 66 percent say they care more about environmental issues than they did a year ago
- 28 percent mentioned the environment when asked what they think about often.

The Higher Education Research Institute surveyed close to 250,000 first-time, full-time students at 340 U.S. colleges and universities in 2008. Nearly one-third of the students reported that cleaning up the environment was “essential” or “very important” and nearly half felt that the adoption of green practices to protect the environment was essential. <sup>69</sup> That commitment carries over throughout the college years, as many college recruiters can testify. Observes one Lockheed-Martin Space Systems Executive “50 percent of the top talent we try to recruit from universities want to work for a green company.”<sup>70</sup>

The *Green Report Card* was created to identify colleges and universities that are leading by example in their commitment to sustainability. This information is not only accessible to prospective students; it is designed to help schools learn from each other’s experiences.<sup>71</sup> The 2009 report found that 1 in 7 schools has at least one green roof on campus, almost half have green building projects, and “a notable 42 percent of schools have at least one LEED™-certified green building or are in the process of constructing one.”<sup>72</sup>

In recognition of the importance of sustainability as a practice, policy, and educational tool, the California State Student Association passed the CSU Student Sustainability Resolution in support of a CSU sustainability policy. The resolution calls for multiple energy conservation measures, including that “all new and renovated buildings at CSU campuses be designed and built to a LEED™ Silver rating or higher (without binding the CSU to actually pursue LEED™ certification).”<sup>73</sup>

In the polling results for “What Should Cal Poly Do?” conducted at Cal Poly’s Focus the Nation event on February 5th, 2009, 98.5 percent of the 835 students, faculty, and staff polled wanted some sort of action on sustainability.<sup>74</sup> While the survey was only a small sampling, and although it did not include a question on green construction, it is important to note that interest in sustainability exists among the student population.

What Should Cal Poly Do?	Votes	%
Require a Sustainability GE	293	35%
Prohibit the Sale of Plastic Water Bottles	129	15%
Ban Plastic Bags (Campus Market and El Corral)	235	28%
Mandate Campus-wide Composting	166	20%
None of These	12	1%
<b>Total</b>	<b>835</b>	<b>100%</b>

**Figure 2-3. Focus the Nation Sustainability Poll<sup>75</sup>**

The subject of green infrastructure was at the forefront in 2008-09 with the “The Green Initiative Fund (TGIF), driven by Cal Poly’s Associated Students, Inc. (ASI). As of April 13, 2009, 466 students had been polled on sustainability issues. Sixty-three percent of students do not think the university is doing enough to promote sustainability on campus and approximately the same number favored imposing a student fee, depending on the amount, to go toward sustainable initiatives. The preferred areas of support include: energy efficiency (51%), renewable energy infrastructure (37%), transportation (31%), and green building (30%).<sup>76</sup> While this author found no evidence of a faculty/staff survey on sustainability, there is speculation that sustainability is an important value to this group as well. Cal Poly’s Academic Senate adopted the Resolution on Sustainability Learning Objectives on June 2 2009, which outlined learning objectives to prepare students to understand and apply sustainability principles academically, and in their professional and personal lives.<sup>77</sup>

As universities and colleges position themselves to compete for the top students in the future, sustainability is a marketable tool; indeed it is an indirect benefit of smart practices that adds nothing to the recruitment budget. Observes John Morris of Colorado State University,

Many institutions are vying for national and international recognition. To do this, they compete for students, faculty, and research funding. As the next generation becomes more focused on reducing their environmental footprint, having a sustainable mindset can be a significant recruiting tool. More than ever before, university building designs are viewed as enhancing and preserving our institutional heritage while creating an attractive environment in which to learn, discover, and live.<sup>78</sup>

Sustainability offers a competitive advantage. Notes architect John Echlin, “Within the education sector, sustainability is no longer a differentiator – it’s really the baseline whether you’re doing



classroom buildings, residence halls or campus planning.”<sup>79</sup> Whether the message of sustainability is compelling to other audiences, primarily potential donors, will be explored in Chapter Seven.

## **Conclusion**

Delivering high performance buildings on university and college campuses should not be seen as a complex problem to solve; it should be viewed as a responsibility and an opportunity. For institutes of higher education, green buildings offer financial, social, and environmental benefits for campuses, the surrounding community, and society-at-large. In fact, failure to build sustainably only adds unnecessary costs to the campus budget – in energy, in future retrofitting, in lost productivity and sick leave, and in environmental degradation. There is also the potential liability to the university’s reputation, and the impact that might have on faculty and student recruitment and retention. Academia is perfectly positioned to lead by example; the very practice of building green a learning opportunity that transcends the classroom.

As we will see in the following chapters, the upfront costs (or the perception of added costs) of green building still pose an obstacle for many campus leaders. In this case, it is not only critical that campus decision makers understand the benefits of green buildings; they must be able to evaluate and prioritize those benefits against the opportunity costs of not building green. Sustainability as a priority value is paramount in transforming the funding paradigm. That value cannot be held by campuses alone, it needs to be supported at every level of governance – Cal Poly, the CSU, and the State of California. The next two chapters outline how the State and CSU do and do not support green building in their policy and practice, including the process of how capital projects are funded on CSU campuses.

## Chapter 3

### How Capital Projects are Funded

While many capital projects in the California State University (CSU) system have been constructed with non-state funding, the majority of new campus buildings have historically been supported, at least in part, by the State of California. The capital outlay process that funds projects for the CSU system is as complex as it is arduous. It is a process that involves voters, tax payers, the Governor's office, the State Legislature, Department of Finance, various subcommittees, the CSU Chancellor's Office, CSU Board of Trustees, and campus representatives.

The intent of this chapter is not to detail the process from bonds to bricks, nor is it to oversimplify an intricate system of fund allocation. The purpose, rather, is to provide an overview of the primary funding model that has historically driven capital projects on CSU campuses and determine whether that model supports green building. The state capital outlay process is just one element of the funding paradigm that determines which campus projects are funded, when they are funded and why they are funded. Before transcending the funding paradigm, it is important to understand this key aspect.

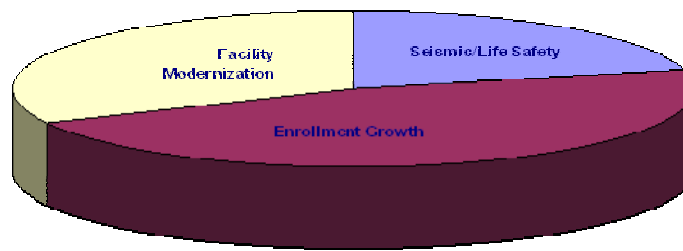
#### ***Funding from the State to the CSU: Bound by Bonds***

CSU capital projects are funded primarily by General Obligation (GO) Bonds which are voter approved. The purchase of bonds by California citizens funds statewide infrastructure projects - including university facilities.<sup>80</sup> The state promises to repay the debt with interest over a specified period of time. The principal and interest on all GO bonds are paid out of the state's general fund.<sup>81</sup> According to Bettina Redway, Deputy Treasurer of the State of California, bonds fund the majority of major capital outlays across the state.

Bonds are subject to voter approval generally every two years, so the language must be specific and carefully crafted. CSU Proposition 1D, which authorized \$690,000,000 in 2006 for CSU capital projects reads:

Proposition 1D authorizes two years of capital funding for the CSU totaling \$690 million to construct and renovate facilities to meet the demands of its growing student population and to address the necessary seismic/life safety needs of its 23 campuses. The bond funds are also vitally important for the renewal of outdated infrastructure in existing facilities to support modern pedagogy,

improve energy efficiency and provide enhanced sustainability in keeping with the policies set forth by the CSU Board of Trustees.<sup>82</sup>



**Figure 3-1. CSU Proposition 1D Distribution**<sup>83</sup>

The proposition was named the “Kindergarten–University Public Education Facilities Bond Act of 2006.”<sup>84</sup> Says Frank Whitlatch of Humboldt State University, bonds need to be tied to educational initiatives, preferably K-12, in order to pass. “This,” says Whitlatch, “will never change.”<sup>85</sup>

Some capital projects are funded by Lease Revenue Bond (LRB) bonds. Like General Obligation Bonds, Lease Revenue Bonds are used to fund state capital projects and are sold to investors with a promise of a return on investment (ROI). Unlike GO bonds, however, LRB’s may be authorized without voter approval.<sup>86</sup> This type of funding, though not backed by the full faith and credit of the state, offers more flexibility in funding. According to Elvyra San Juan, Assistant Vice Chancellor of Capital Planning, Design & Construction for California State Universities, the Center for Science and Mathematics at Cal Poly will be funded through a Lease Revenue Bond. In addition, funding for LRB’s was included in the federal economic stimulus package that passed in fall 2008.<sup>87</sup>

### **California State Legislature & The Department of Finance**

Proceeds from the sale of bonds are included in the state budget for appropriations. Allocations are determined by the legislature, who reviews the analysis from the California Department of Finance. This analysis is prepared over the course of a year, during which time the Department of Finance works with a number of state entities, including the California State University (CSU) system, to prepare and defend recommended allocations in the state budget.<sup>88</sup>

The Senate Budget and Fiscal Review Committee and the Assembly Budget Committee, with their respective subcommittees, consider each project proposed in the Governor's Budget. If either subcommittee requires additional information on a particular project of the CSU, the Chancellor's Office has an opportunity to speak in depth to the issues during that subcommittee's scheduled hearings. From the CSU to the initial recommendations of each subcommittee to the

amendments made during the legislative process, the recommendations become a part of the proposed Governor's Budget and the final Budget Act.<sup>89</sup>

For the majority of campus projects, preliminary plans must be approved by the Public Works Board before appropriations for the final architectural program or construction can be expended. After the Public Works Board approves the preliminary plans, the CSU's Capital Planning Design and Construction (CPDC) office receives the appropriate approvals from the Department of Finance and the approved funds can then be encumbered."<sup>90</sup>

### **California State University**

When bonds become available, the CSU works with government affairs representatives to determine the CSU's 'fair share' and must then prioritize projects by campus.<sup>91</sup> The CSU CPDC issues an annual 'call letter' for campus submittals of capital projects. Each campus, in essence, competes with one another for a share of the budget.<sup>92</sup> From the campus submittals, CPDC prioritizes campus projects and develops the capital outlay program for review and approval by the Board of Trustees. Once approved, the proposed state-funded portion of the capital outlay program is submitted to the Department of Finance for inclusion in the Governor's Budget. This cycle usually takes about 18 months.<sup>93</sup>

Once the comprehensive budget has been submitted to the Department of Finance, the CSU CPDC continues to fight for the CSU's share of the bond money, says San Juan.<sup>94</sup> Non-state money, says Bob Kitamura, Director of Facilities Planning at Cal Poly, can have some influence on the timing of state funding relative to other CSU projects.<sup>95</sup> Except where a campus has been delegated the authority to administer the project funds, The CSU chancellor's office administers the funds for capital projects<sup>96</sup>

### **CSU Campuses**

Long before buildings are selected for potential funding by the CSU, significant planning has occurred at the campus level. University colleges, departments or organizations work with the administration and facilities staff on the initial feasibility and planning for capital projects. Campuses are responsible for the costs of the initial feasibility studies and preliminary design that sets the project scope. Budget submittals consist of cost estimates, plans, and an outline of specifications. The university president and executive administrators, guided by the campus master plan, have already given their endorsement.<sup>97</sup>

Capital outlay budgets are zero-based; therefore campus projects are submitted annually to the CSU as part of a five-year Capital Improvement Program (CIP) document to the CSU Board of Trustees. The Board monitors facility development and renovation with an eye on the long-term viability of the physical facilities at each campus and the university's ability to accommodate growth in student enrollment. New construction must follow the campus master plan, which balances infrastructure objectives with academic objectives. "Proper planning, programming, budgeting, and project administration are vital to the capital outlay process."<sup>98</sup>

Specific appropriations of funds are based upon "need, scope, phase, estimate of cost, and relevant environmental reviews."<sup>99</sup> Proposed projects must comply with CSU approved policies, procedures and formulae. This includes:

- an architectural program for the building that includes room types and configurations, square footage and cost estimates
- projections of space needs, based on the cost per square foot for a defined space in compliance with CSU standards
- optimum utilization of existing space and property
- full-time equivalent (FTE) students on the campus
- capacity (i.e. classroom) versus non-capacity (i.e. office) space <sup>100</sup>

According to San Juan, the biggest factors for the CSU when determining project selection are the:<sup>101</sup>

- capacity versus enrollment for the program
- specific space needs of the discipline, for example lab or classroom
- use of multi year enrollment projections
- balance of academic affairs system-wide
- summary of campus capacity space (capacity space generates FTES)

At Cal Poly, capital outlay projects are categorized along three dimensions: "funding source, size (dollar amount), and whether or not they accommodate planned student capacity."<sup>102</sup> Funding is allocated to the university as either a Minor Capital Outlay (projects of \$400,000 or less), which is administered by Facilities Services or a Major Capital Outlay (projects greater than \$400,000), which is administered by Facilities Planning. <sup>103</sup>

## **Challenges**

Apart from the complexity of the capital outlay process, there are inherent issues with reliance on bonds that pose a risk. Bonds, dependent on voter approval, are not the most stable source of funding. Bond propositions rely on voter approval; therefore, bonds for higher education must be tied to more popular issues such as K-12 education. In an economic downturn, investment dollars decline. In addition, as bonds are purchased with the full backing of the state, buyers must have confidence in the credit rating of the state. The recession of 2008-09 has provided

concrete evidence of the ramifications of lack of faith in the state credit rating amongst investors. The struggle to sell bonds has resulted in a freeze on capital projects across the state, including universities.

Another challenge with a bond-driven capital outlay program is the reality that while new construction relies on voter dependent monies, operating costs are derived from the General Fund. This poses a special challenge when planning new energy efficient buildings. While monies from the General Fund are made available to campuses to upgrade the existing infrastructure, these funds do not flow to new construction projects. What makes matters worse is that the bond money that does cover new capital projects is allocated based on criteria that has nothing to do with energy efficiency. The disconnect between capital and operating funding not only makes it challenging to equip high performance buildings with energy saving mechanisms when it is most cost effective to do so; there is actually little incentive to try. Deputy Treasurer Redway and others recognize the conflict that this causes between capital planning and operations. “Government agencies,” says Redway, “are slow to understand the savings. The state, including universities, doesn’t care about the bottom line; they are not trying to make a profit.”<sup>104</sup>

Redway is an advocate of the bond process, however. Just as most households need to finance their own homes through 20-30 year mortgages, so must the state. “Bankers,” she says, “would tell you that bonds make sense.”<sup>105</sup> Bob Kitamura agrees that it is a creative way to finance projects and necessary in a state the size of California.<sup>106</sup> It is also the only way available to fund capital projects through the state at the moment.

The state’s capital outlay process is also inefficient. The time lag between planning estimates, the appropriation of funds and bids, can add cost to a project. In addition, the Budget Act determines the time table for construction and when funding must be encumbered and spent. If funds are not spent in that time frame, they will revert back to the state.<sup>107</sup> This applies enormous pressure on the private funding efforts upon which campuses increasingly rely to offset shortfalls in state funding.

If we are bound by bonds and state policies, are we equally limited to the CSU formulae that determine allocations of bond revenue for campus capital projects? While intended to respond to the educational needs of the growing California State University population, the CSU formulae leave little room for innovation – academic or otherwise. Budget allocations based on FTE’s and pre-determined square footage by discipline make it challenging to support pedagogical advances or cutting edge curriculum. Nor does it prepare us for a time when sustainable choices

may just have to supersede programmatic demands. Some would say that time is never; that pedagogical demands should always take precedence at a university. Nowhere in this historic funding model has green design or site development been noted, rewarded or accounted for. In fact, rather than incenting and prioritizing projects that integrate elements of green design, there is a strong undercurrent that green is always the first to go.

This might be changing. According to Elvyra San Juan, the CSU has shown that it can be responsive to change. In 2003-04, construction costs skyrocketed due to significant cost increases within the industry, such as steel and energy. Although the budgets for the affected projects had been submitted two years prior, the CSU successfully lobbied for a 20 percent budget augmentation (something that had never been done before). In addition, says San Juan, green buildings have become a priority over time. In an effort to build buildings that last longer, the CSU has increased budgets to accommodate additional mechanical, roofing, exterior skin costs. Most importantly, for the 2010 budget (submitted in 2008), a 3 percent line item increase has been added to the Capital Outlay Estimate for sustainable design and sustainable site development (See Appendix I). According to San Juan, this has so far been supported by the state, although "finance has pushed back a little." While she does not believe (as she claims the Lt. Governor John Garamendi says<sup>1</sup>) that we can build at the LEED™ Platinum level, the additional 3 percent allows, for example, for photovoltaics to be added with private funding. The final plan and Capital Outlay Estimate, according to Assistant Vice Chancellor, must be able to convince finance.<sup>108</sup>

## **Conclusion**

With a state the size of California, with a budget imbalance equally as grand, it is not likely that the bond-driven capital outlay process will change any time soon, if ever. Bond funding, however, is not the real problem. The reality is that funding for both capital projects and building retrofits is insufficient. The costs of advanced energy efficiency and renewable energy measures are most often not provided for in new construction, and there is no incentive or reward for campuses to raise capital elsewhere to do so. Allowing for more flexibility in how bond monies are allocated and spent could better support green building practices. For example, bonds can be written in a way that would integrate funds for green building measures. The same holds true for operating

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<sup>1</sup> In fact, Lt. Governor Garamendi has challenged California college campuses to become more energy efficient and sustainable. For new construction, Garamendi encourages campuses to, "Be bold. Approach with platinum. Force the president, the chancellor, the trustees, the legislature, and the governor to say no, we are not going to do that. Right now, it doesn't go that way. It comes down from the top." Fleming, Derek, "Buildings to meet Lt. Gov.'s energy challenge," Sacramento State Hornet, 3 September 2008, [http://www.ltg.ca.gov/index.php?option=com\\_content&view=article&id=350:90308-buildings-to-meet-lt-govs-energy-challenge-&catid=66:news-articles&Itemid=345](http://www.ltg.ca.gov/index.php?option=com_content&view=article&id=350:90308-buildings-to-meet-lt-govs-energy-challenge-&catid=66:news-articles&Itemid=345), (accessed 12 October 2009).

funds which, if made available to new construction as well as existing infrastructure, would save taxpayers millions of dollars over the life span of each building.

Although the CSU's 3 percent line item may fall victim to the recession, this slight adjustment in budgeting to support green building within the CSU may represent a shift in the funding paradigm. Are these offerings enough to make high performance buildings the norm on CSU campuses? In addition, new California state policies guiding green state facilities are already showing an impact within the CSU. Will the state's commitment to "support modern pedagogy, improve energy efficiency and provide enhanced sustainability"<sup>109</sup> be realized despite the current barriers of the capital outlay process? Chapter Four will address these questions while examining the policies that are driving green building practices on California campuses.



## Chapter 4

### **Green Building Policy and Practice: The State of California, The California State University and Cal Poly**

In recent years, the State of California and the California State University (CSU) have adopted policies mandating more sustainable facilities. This has been followed by a marked growth in green building on CSU campuses. Despite its shortcomings, does the state's capital outlay process support greener buildings on CSU campuses or are universities meeting the mandate despite this practice?

This chapter will review the current state and CSU policies and practices governing capital projects on the 23 CSU campuses and the system-wide impact. It will then examine the practice of green building in recent years at Cal Poly; and the challenges that remain.

#### **The State of California**

Through public policy, the State of California has incrementally set standards for sustainable building practices. In August 2000, Governor Davis issued Exec Order D-16-00, establishing sustainable building as a primary goal for state construction.<sup>110</sup> Title 24 (Part 11), California's *Green Building Standards Code*, contains the regulations that govern the construction of buildings in California. It mandates that facilities be designed to include specified green building measures such as energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental air quality.<sup>111</sup>

In 2004, Governor Schwarzenegger signed EO S-20-04, California's green building initiative. The order contains a stated goal of reducing energy use in state-owned buildings by 20 percent by 2015 and "designing, constructing and operating all new and renovated state-owned facilities paid for with state funds as "LEED™ Silver" or higher certified buildings."<sup>112</sup> "California state government has an ambitious goal of rapidly transforming California's State Office Buildings into 'Green Buildings' that are net exporters of energy before 2030."<sup>113</sup>

#### **California State University**

The California State University followed suit. CSU Executive Order 917, established in 2004, contains provisions for sustainable building practices.<sup>114</sup> In 2006, CSU Executive Order No. 987 mandated that all new construction projects designed in FY 2007-08 and beyond exceed 2005 Title 24 Standards by at least 15 percent and that all major renovations projects shall at a

minimum outperform the current Title 24 Standard by at least 10 percent. In alignment with the state, “each campus shall strive to achieve a higher standard in the CSU Sustainability Measurement System equivalent to LEED™ Silver within project budget constraints.”<sup>115</sup>

Campuses may elect to pursue LEED™ certification, but they must use non-state funding sources.<sup>2</sup> The *CSU Architectural and Engineering Guidelines* outline the practices required to exceed Title 24 standards, including an emphasis on design choice and life cycle analyses to reduce long-term energy use and operational costs.<sup>116</sup>

The CSU Capital Planning Design & Construction (CPDC) office works with campus facilities planning offices to ensure that sustainability goals are incorporated in every aspect of planning for the program, design and budget of CSU facilities. Emphasis is placed on the renovation of existing buildings for energy efficiency and optimal usage of existing space. For new construction, the CPDC office encourages the integration of sustainability measures such as material life expectancy, energy conservation measures, and site selection (for example, encouraging pedestrian oriented campus designs or siting buildings for optimal use of microclimate, solar orientation, and photovoltaics).<sup>117</sup>

The CSU is proactive in promoting sustainability as a means to both raise visibility as a system and as a way for campuses to learn from their shared experience. CSU Sustainability Awards recognize campuses for their sustainability efforts including building retrofits, green buildings, transportation, and student programs. In 2008, Cal Poly won an Overall Sustainable Design award for the Bonderson Projects Center, an HVAC Design award for the Satellite Central Plant; and an Innovative Waste Reduction award for the Integrated Waste Management Program.<sup>118</sup> The CSU Sustainability Awards were announced at the 2008 CSU/UC/California Community College Sustainability Conference, held at Cal Poly. The seventh annual conference represented another opportunity to promote visibility and knowledge sharing. CPDC has also recently hired a half-time sustainability and training coordinator to work with campuses, including grant writing training on sustainability grants (on any aspect of sustainability).<sup>119</sup>

The mandate to build green – at least to LEED™ Silver equivalent – is beginning to show its impact across California’s campuses. In 2008, the CSU compiled a system-wide sustainability summary on green building projects. The report indicates 13 of 23 campuses with LEED™ or LEED™ equivalent new construction projects in progress or completed as of 2008. This included:<sup>120</sup>

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<sup>2</sup> LEED™ certified projects, such as Bren Hall at UC Santa Barbara, constructed prior to 2006, used state funding to pay for the costs of certification.

Bakersfield: Mathematics and Sciences Bldg: LEED™ Silver<sup>3</sup>; Construction (Began 2008)  
Recreation and Wellness Center: LEED™ Silver, Construction (Began 2008)

Chico: Student Services: LEED™ Gold; (Completed 2008)  
Wildcat Activity Center: LEED™ Silver, Construction (Complete: Aug. 2009)  
Sutter Hall (Housing and Dining): LEED™ Silver, Construction (Began 2008)  
Natural History Museum: LEED™ Silver, Construction (Began 2009)



**Figure 4-1. Student Services Center, CSU, Chico<sup>121</sup>**

Fullerton: Arboretum Visitor's Center: LEED™ Silver Equivalent; (Completed 2006)  
Student Recreation Center: LEED™ Gold; (Completed 2007)  
Steven G. Mihaylo College of Business & Economics: LEED™ Silver Equivalent;  
(Completed in 2008)



**Figure 4-2. Cal State Fullerton Recreation Center<sup>122</sup>**

Humboldt: Behavioral and Social Sciences: LEED™ Gold; (Completed 2006)

Monterey Bay: Library: LEED™ Certified<sup>4</sup>; (Completed April 2009)

Pomona: ASI Student Recreation Center: LEED™ Silver; Feasibility Study (2014)

Sacramento: Recreation & Wellness Center Phase II: LEED™ Silver; Design (Complete: 2010)  
Student Housing Phase 1: LEED™ Silver; Construction (Completed: July 2009)

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<sup>3</sup> Actual construction built to LEED™ Silver equivalent

<sup>4</sup> Actual construction built to LEED™ Silver equivalent

San Bernardino: Palm Desert Campus Phase 3: LEED™ Gold; (Completed 2008)

San Diego: Student Housing Phase 1 (ECO Hall), LEED™ Silver Equivalent, Planning (2008)

Cal Poly SLO: Poly Canyon Village (Student Housing): LEED™ Certified; Construction (Phase 1: Completed 2008)

San Marcos: Public Safety: LEED™ Platinum<sup>5</sup>; Design (2008)

Sonoma: Student Housing, LEED™ Silver Equivalent, Construction (Complete: July 2009)  
University Center: LEED™ Silver Equivalent; Planning/Schematics (2008)

Stanislaus: Science 2: LEED™ Silver, (Completed 2008)

By reviewing campus websites and conducting interviews (See Appendix II), this author was able in most cases to pinpoint the primary source of funding for these projects. In fact, the chart below illustrates that several campuses earned LEED™ Silver (and equivalent) and LEED™ Gold building ratings on state funded projects. This led me to conclude that the state's capital outlay process is not in and of itself an obstacle to greener buildings on CSU campuses.

University	Building	LEED™ certification	Funding Source(s)	Construction Start	End
Bakersfield	Mathematics and Sciences Bldg	LEED™ Silver (EQ)	State	2006	2008
	Recreation and Wellness Center	LEED™ Silver		2008	-
Chico	Student Services Center (SSC)	LEED™ Gold	State	2006	2008
	Wildcat Activity Center	LEED™ Silver	Student Fees	2007	2009
	Sutter Hall (Housing and Dining)	LEED™ Silver		2008	2010
	Natural History Museum	LEED™ Silver	State-Private	2008	2009
Fullerton	Student Recreation Center	LEED™ Gold	Student Fees (primary)	-	2008
	Arboretum Visitor's Center	LEED™ Silver (EQ)	Private	2004	2006
	College of Business & Economics	LEED™ Silver (EQ)	State-Private	2006	2008
Humboldt	Behavioral & Social Sciences Bldg	LEED™ Gold	State	2005	2007
Monterey Bay	Library	LEED™ Silver (EQ)	State-Private	-	2008
Pomona	ASI Student Recreation Center	LEED™ Silver	Student Fees (primary)	-	2014
Sacramento	Recreation & Wellness Ctr Phase II	LEED™ Silver	Student Fees-Private	2008	2010
	Student Housing Phase 1	LEED™ Silver	Rental Revenue	2007	2009
San Bernardino	Palm Desert Campus Phase 3	LEED™ Gold	State	2006	2008
San Diego	Student Housing Phase 1	LEED™ Silver (EQ)	State	2008	
San Luis Obispo	Poly Canyon Village Phase I	LEED™ Certified	Rental Revenue	-	2008
San Marcos	Public Safety	LEED™ Platinum (EQ)	State	TBD	TBD
Sonoma	Student Housing	LEED™ Silver (EQ)	State	2008	2009
	University Center	LEED™ Silver (EQ)		2008	-
Stanislaus	Science 2	LEED™ Silver	State	-	2008
An "-" indicates unavailable data					

**Table 4-1: Green Construction on CSU Campuses 2004-2009**

<sup>5</sup> Actual designed to LEED™ Platinum equivalent

While the debate about the costs and benefits of LEED™ certification (versus equivalency) will be discussed in the following chapters, it is interesting to note that several state funded projects built in the last three years were able to achieve LEED™ certification. This occurred despite the Chancellor's Executive Order 987, issued in 2006, which specifically mandated that the state would not fund LEED™ certification. How did they do it? At Chico State, The Student Services Center (LEED™ Gold) was funded through state resources and LEED™ associated costs were "incorporated in the budget."<sup>6</sup> Humboldt State's Behavioral and Social Sciences Building (LEED™ Gold) was funded by the state and the costs for LEED™ certification were also "incorporated in the budget."<sup>123</sup> In other words, as Hamid Azhand, Director of Capital Planning, Design & Construction explains in the case at CSU San Bernardino, alternate campus funds pay for the documentation.<sup>124</sup>

There are other examples of green building within the CSU that are not reflected on the 2008 CSU report as well. For example, Cal Poly's ASI Student Recreation Center expansion has a contract for services to achieve a LEED™ Silver goal. There are also many models for achieving a LEED™ rated building (or equivalent) in higher education outside of the CSU system. For the purposes of comparison, I will highlight two other California schools. University of California, Merced, the newest UC campus, incorporated in the campus design a LEED™ Silver goal for every facility. This was entirely state funded.<sup>125</sup> According to Mark Maxwell, Assistant Project Manager/LEED Coordinator at UC Merced, "Green was incorporated into the design when planning the campus. They looked at LEED™ credits, picked what they wanted to do and realized it was easy to get to LEED™ Silver without additional costs."<sup>126</sup> In fact, UC Merced has a goal to obtain at minimum a LEED Silver rating for its campus buildings. To ensure that that goal is fulfilled, campus construction contracts include LEED™ Silver requirements with clear performance levels specified.<sup>127</sup> The Donald Bren School of Environmental Science and Management (Bren Hall), at the University of California, Santa Barbara, has earned recognition as the "greenest" laboratory building in the United States.<sup>128</sup> The LEED™ Platinum building, one of the first in the country to be LEED™ certified and the first LEED™ Platinum laboratory, was funded by the state through two bond cycles.<sup>129</sup>

It is evident that public universities in California are able to build at LEED™ Silver and Gold (and equivalent) levels within the state budget. Some projects, of course, rely on a mix of private-public funding (hybrid) or non-state funds (for example, student fees). So where does Cal Poly fit into this scenario?

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<sup>6</sup> CSU campus LEED™ projects built prior to the Chancellor's Executive Order 987 (2006) were able to integrate LEED™ certification costs in the capital outlay budget.

## Green Building at Cal Poly

In addition to state and CSU policies, there are other factors that influence green building at Cal Poly. In March 2001, the CSU Board of Trustees adopted and certified Cal Poly's Master Plan, which sets the direction for physical development and land use for the campus through approximately 2021.<sup>130</sup> The Master Plan addresses academic program demand, physical and environmental constraints and opportunities, anticipated curriculum and student support needs, and capital and operating budget requirements based on projected 17 percent increase in enrollment over approximately 20 years. The most significant enrollment growth, based on state demographics, is anticipated to occur by 2010.<sup>131</sup> The CSU Board of Trustees requires that facilities development follows the campus master plan objectives.<sup>132</sup>

Cal Poly Facilities Facility Design Considerations are guidelines that are used as a starting point for the basis of design for Cal Poly capital projects. These guidelines incorporate the goals of CSU Executive Order No. 987 and a campus preference to set measurable goals for energy efficiency, for example to exceed Title 24 by 30 percent (twice the CSU goal), at the start of the design phase through construction and commissioning. It also outlines a campus preference to register with *Savings by Design*, a program that offers services and incentives to help decision makers raise energy performance.<sup>133</sup>

The *Cal Poly Facilities General Requirements Subgroup* document more specifically defines the attributes of sustainable design for the campus. This includes siting and design, durable systems and finishes, space layout and future reuse, building systems that optimize energy, water, and other nature resources, recycled content and recyclable materials, and operational performance. The guidelines also outline measures for cost-effectiveness in sustainable building including the identification of economic and environmental performance measures, determination of opportunities to save costs, life cycle costing, and the adoption of an integrated systems approach. An integrated systems approach treats the entire building as one system and recognizes that individual building features such as lighting, windows, heating and cooling systems, and control systems are not stand-alone systems.<sup>134</sup>

According to Bob Kitamura, every project has sustainable design personnel assigned to it, usually on the architects' team. Sometimes they hire an outside consultant. A LEED™ Accredited Professional (AP) is required for every aspect of the design and consultation, especially as you elect specific material choices. Cal Poly's sustainability planner is also involved with every project from the beginning.<sup>135</sup>

How has all of this impacted green building at Cal Poly? Has the university kept pace with other California public universities, especially those who designed high performance buildings prior to the most recent LEED™ Silver equivalent mandates? In the past three years, Cal Poly has achieved some success in constructing greener buildings. By looking at five of these recent construction activities - the Bonderson Project Center, Construction Innovation Center, Poly Canyon Village, the Center for Science and Mathematics, and the ASI Student Recreation Center – I was able to outline these projects according to their sustainability features and funding.

*Bonderson Project Center*



**Figure 4-3. Bonderson Project Center<sup>136</sup>**

The Bonderson Project Center, which opened in 2006, won “Best Overall Sustainable Design,” in the CSU Sustainability Awards category in 2008 and a Best Practice Awards from the Green Building Research Center at UC Berkeley in the same year. The project was described as one that “simply and elegantly addresses all components of sustainable design. The building ensures high indoor air quality, occupant comfort, and usability through daylighting, innovative ventilation systems, and flexible space design.”<sup>137</sup>

The building was funded in its entirety by one private donor. According to its project manager, Mary Alice Avila, sustainability was not part of the initial intent. Mr. Bonderson’s vision was not sustainability; rather, it was student interaction. The project goal, however, was to beat Title 24 by 20 percent. Using the LEED™ scorecard, Avila believes that the building would have either barely made certification, or just missed it. Because the donor’s priority had nothing to do with the green features, a decision was made to not ask him for additional money for LEED™ certification.<sup>138</sup>

#### *Construction Innovations Center*



**Figure 4-4. Construction Innovation Center<sup>139</sup>**

The College of Architecture and Environmental Design's (CAED) Construction Innovation Center broke ground in 2007 and was completed in September 2008. The Center is a new 30,000 square foot building dedicated to construction management and interdisciplinary research and education among all five majors within CAED. It features seven dedicated labs, twelve classrooms and lecture halls, faculty offices and headquarters for the California Center for Construction Education.<sup>140</sup> The center is part of a larger \$33 million project that included the renovation of an existing building. The state funded about \$26.5 million of the project cost and a multi-year fundraising campaign was conducted to make up the difference.<sup>141</sup>

Some green features were incorporated in the building plans, for example, timber from certified sustainable forests<sup>142</sup> However, the project has earned a reputation on campus as the "Construction Innovation Center that 'isn't.'" Tanya Kiani, lead fundraiser for the building project before moving to the College of Agriculture in 2006, said that many of those involved in the project supported green but as it was so hard to raise money for the building, green features were the first to get cut. She also tried to push LEED™ certification, as she thought it would be more marketable, but she was curtailed. She believes the building could have been LEED™ certified, but that it was going to cost too much money.<sup>143</sup>

#### *Poly Canyon Village*



**Figure 4-5. Poly Canyon Village<sup>144</sup>**



Poly Canyon Village, whose first phase opened in 2008, is contracted to be LEED™ Certified. According to Cal Poly's 2008 sustainability report, "this is the largest single development project undertaken at Cal Poly and will account for approximately 20 percent of all the non-farm building space on campus."<sup>145</sup> It will provide on-campus housing for 2,664 students. Poly Canyon Village was funded by a campus auxiliary, University Housing, which relies on rental revenue, not state funds.

The sustainable choices, including water reduction, natural ventilation, recycling of 75% of its construction waste, use and access to natural daylight, and co-generation system are all factored in to its LEED™ certification and will make it the first LEED certified project on the Cal Poly campus, and the largest LEED certified project in the CSU system<sup>146</sup> In addition, according to Dennis Elliot, Manager of Engineering & Utilities at Cal Poly, Poly Canyon Village, by moving more students on campus, will reduce greenhouse gas emissions caused by transportation.<sup>147</sup>

#### *Center for Science and Mathematics*



**Figure 4-6. Center for Science and Mathematics<sup>148</sup>**

The Center for Science and Mathematics, initially scheduled to break ground in 2009 and now delayed due to the budget crisis, will replace Cal Poly's science and math classrooms, laboratories and offices with a building that is more conducive to modern needs. The project will provide 185,800 square feet of new lecture space, laboratory space and faculty offices for the College of Science and Math.<sup>149</sup>

The facility is designed to meet LEED™ Silver equivalent standards and it is expected to exceed Title 24 by 30 percent. "This is great," says Dennis Elliot, "for a lab building."<sup>150</sup> Notes Project Manager Barbara Queen, "Energy savings are especially difficult for a lab."<sup>151</sup> Air changes, she says, will drop to a minimum when the lab is not occupied and must ramp up when it is in use. This requires automatic sensors that will detect the need for increased ventilation, and Energy Star™ rated equipment and lighting that cost extra. Elliot adds that the initial LEED™ checklist indicates the building is just a few points shy of LEED™ Gold.<sup>152</sup> Joel Neel, Associate Director of

Facilities Planning & Capital Projects, concurs that the Center is tracking at a high LEED™ Silver. The building, says Neel, was designed to be green from the beginning. The design integrates a cutting edge cooling system (chilled beams) for which they will pay a premium up front, but it will pay for itself in the long-term.<sup>153</sup>

Additional green features include certified wood, recycled content, water-use reduction, natural daylighting natural ventilation, use of regional materials, and a laboratory active monitoring system.<sup>154</sup> Additional features that would earn the building a LEED™ Gold rating, such as a green roof, rain water harvesting and native landscaping have been put aside because of cost. Fundraising for the building, however, continues. Neel believes that funding is an issue when talking about LEED™ Gold, especially the cost of certification.<sup>155</sup>

Project Manager Barbara Queen emphasizes that the new center consolidates what is now a sprawling “campus” for science and math. This is echoed by Bob Kitamura who says that the important thing to remember is that, while the new building will have more square footage, it will take a smaller footprint.” No new infrastructure, no additional roads are needed for the new center. “The goal,” says Kitamura, “is to keep the campus compact.”<sup>156</sup> The new center will be built literally in the center of campus.

#### *ASI Recreation Center Expansion*



**Figure 4-7. ASI Recreation Center**<sup>157</sup>

In 2008, Cal Poly students approved a referendum to raise student fees to expand and upgrade the ASI Recreation Center. At a total project budget price of \$71,128,000, the project will provide an additional 85,000 square feet for ASI. It is currently in design, with projected construction beginning September 2009.<sup>158</sup>

LEED™ certification will be a requirement of the construction contract.<sup>159</sup> Students, says Facilities Planning staff, Mary Alice Avila, really wanted the building to be LEED™ certified. They brought in a sustainability coordinator to lead them through the charette and initial planning

process. The facility will be designed to meet or exceed LEED™ Silver. Strategies under review include orientation, shading (of glass, landscaping, overhangs, etc), ventilation, pervious pavement, a green roof (to enhance landscape/views), materials (earth tone, natural, bamboo) and low E Glass. The project, says Avila, will be funded entirely by students.<sup>160</sup>

Joel Neel notes that cost continues to be an issue. Additional costs for certification for ASI are around \$250,000. He also commented that the two sustainability meetings to date on the project have been poorly attended and that, while students did support a green building, it was a poll – not a vote or fee referendum, so why would they say ‘no’?<sup>161</sup> In fact, approximately 37.7 percent of the student population logged their opinion, with 74.5 percent voting in favor of the \$65 per student per quarter fee increase – an increase that will be implemented in the future, when the renovated facility is complete.<sup>162</sup>

## **Conclusion**

CSU campuses are proving that university buildings can be constructed at the mandated LEED™ Silver (and equivalent) level within the current funding formulae. This includes state funded and public-private funded buildings. Some campuses are building LEED™ Gold facilities within conventional budgets.

In recent years, Cal Poly has moved in the direction of sustainable building, but has lost opportunities to construct buildings with higher performance features due to cost (or the perception of cost). This is evident in the Construction Innovations Center and Bonderson Project Center. Currently, the university is mandated to build at LEED™ Silver equivalent and is proving that it can do so with the Center for Science and Mathematics. Again a higher performing building, one that would earn the building a LEED™ Gold rating, seems out of reach because of cost and funding shortfalls<sup>7</sup>. The new construction that will earn a LEED™ certification, Poly Canyon Village, was funded outside of the state capital outlay process. The ASI Recreation Center expansion will most likely earn a LEED™ Silver rating because (a) the students are interested, and (b) it will be funded by student fees rather than bond monies.

Cal Poly Project Manager Joel Neel observes that even with good design, there is an added cost to green.<sup>163</sup> Mary Alice Avila notes that green building is happening, but funding – both in terms of cost and how capital projects are funded within the CSU - is still an obstacle.<sup>164</sup> While the

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<sup>7</sup> It is important to note that there is some debate as to whether LEED™ certification ensures a high performance building, especially if sustainability is established as a design goal anyway. The Bonderson Project Center, for example, won several sustainability awards, but is not LEED™ certified.

State of California has established a mandate of LEED™ Silver equivalent, bond money has not increased to support green measures. Says Joel Neel, “Cal Poly is committed to the most sustainable building we can based on the budget we have.”<sup>165</sup> There is also a perception that when there is a shortfall in the budget, it is the green element, not the program element that is the first to go. This is echoed in one of the Cal Poly Facilities planning documents, which reads, “Capital project planning and design is a process of balancing long-term institutional needs for academic and related programs with environmental concerns.”<sup>166</sup>

With the Bonderson Project Center, Poly Canyon Village, and the Center for Science and Mathematics, Cal Poly has gained experience in sustainable building design, yet that experience has reinforced the perception that green buildings cost more, especially at LEED™ Gold or beyond. This does not reconcile with the fact that other CSU and UC campuses have achieved LEED™ Silver and Gold projects within the state budget. Is cost truly a barrier to high performance buildings or do other factors exist? What guides the decision-making process at Cal Poly? Chapter Five will examine the costs of green building and the factors that can either propel or obstruct green building.

## Chapter Five

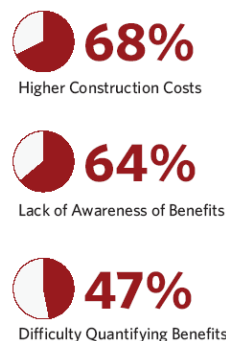
### Confronting the Cost Perception

Do costs increase when the design scope changes to incorporate the type of high performance features that would earn a building a LEED™ Gold or Platinum level rating? If so, how can these projects be realized on the campuses of public universities? How do institutional practices, perceptions and values at Cal Poly influence cost and alternative funding solutions?

In this chapter, I review eight studies that address the proposition that green buildings cost more when compared to the cost of traditional construction. While there are issues inherent with any study of this nature, some important themes emerge that can serve as a tool not only for weighing the costs and benefits of green design on college campuses, but as a guide for reducing both actual costs and perceptions about cost. By measuring these guidelines against actual experiences at Cal Poly, I expose some of the key elements of the funding paradigm at Cal Poly.

#### The Costs of Green Design

Before addressing the funding paradigm, it is important to understand what is at the very core of that paradigm – the costs of green design. In fact, do green buildings cost more? In his book, *The Green Building Revolution*, Jerry Yudelson claims that “the biggest obstacle for green buildings is the perception that they cost more.”<sup>167</sup> Jim Goldman, a project executive at Turner Construction Company in Seattle, concurs. “There’s still a lot of bad information out there with respect to costs, says Goldman. “If you want to kill a green project, there’s nothing easier than using [the prospect of] higher costs.”<sup>168</sup> Indeed, in a 2005 study conducted by the Turner Construction Company, 68% of 665 industry executives surveyed claim high construction costs as a barrier to green building.<sup>169</sup>



**Figure 5-1. Factors Discouraging the Construction of Green Buildings<sup>170</sup>**

Rod Wille, Turner Construction's senior vice president of sustainable construction, says that basic green design doesn't have to cost more. "Good-quality building with basic LEED certification as a goal shouldn't cost any more money. Most of the designers we work with do the right thing in the first place to make the building well-insulated, and specify good mechanical systems, good lighting, and materials that are non-toxic. Most designers are doing that as a matter of standard procedure."<sup>171</sup> This was also echoed in a 2002 article by Consulting-Specifying Engineer in which Senior Editor Scott Siddens noted, "the perception that green design is more expensive is pervasive among developers and will take time to overcome" and "inhibiting green design is the perception that 'green' costs more and does not have an economically attractive payback."<sup>172</sup> In 2001 California's Sustainable Building Task Force was formed in response to Executive Order D-16-00<sup>173</sup> which established sustainability as a primary goal for state construction. This task force was charged with identifying the possible barriers to the execution of this order. Their report, *A Blueprint for Sustainable State Facilities*, noted that there were many factors and practices that led to a perception that sustainable buildings are "unproven" or "too costly."<sup>174</sup>

The perception that green buildings cost more was the impetus behind several studies in the past few years – all an attempt to provide hard data on the true cost of green building. In an attempt to ascertain whether cost is truly a barrier to high performance buildings at Cal Poly, I reviewed the reports of eight of these studies, including:

1. The City of Seattle
2. California's Sustainable Building Task Force
3. Davis Langdon Adamson
4. U.S. Department of Energy
5. U.S. General Services Agency
6. Capital E ("Greening America's Schools: Costs and Benefits")
7. Rebuild Colorado
8. Davis Langdon

While the reports are listed in a chronological order spanning a seven year period, the findings remain fairly consistent among seven of the eight reports. The studies reviewed here indicate that while there are certainly exceptions, there is a green premium, especially at the higher levels of LEED™ certification. Those costs, however, are not as high as generally perceived. Several of the studies focused on life cycle analysis to determine that when there is a green premium, the benefits always outweigh costs.

1.	City of Seattle (2003)	<ul style="list-style-type: none"> <li>• Cost more, not as much as you think (1.2%)</li> <li>• Integrated life cycle costs: benefits exceed cost</li> </ul>
2.	California Sustainable Building Task Force (2003)	<ul style="list-style-type: none"> <li>• Cost more, not as much as you think</li> <li>• Higher level green = higher cost but costs decrease w/experience</li> <li>• Integrated life cycle costs: benefits exceed cost</li> </ul>
3.	Davis Landon Adamson (2003)	<ul style="list-style-type: none"> <li>• LEED™ Certified minimal to zero cost</li> <li>• LEED™ Silver within reach</li> <li>• LEED™ Gold varies</li> </ul>
4.	U.S. Department of Energy (2004)	<ul style="list-style-type: none"> <li>• Depending on the design, green can cost less or up to 10% more</li> <li>• Important to integrate life cycle costs</li> </ul>
5.	U.S. General Services Agency (2004)	<ul style="list-style-type: none"> <li>• Hard costs 0-8% based on LEED™ level</li> <li>• LEED™ Soft costs = 0.1-0.5%</li> </ul>
6.	Capital E: Greening America's Schools (2006)	<ul style="list-style-type: none"> <li>• Cost 1-2% more</li> <li>• Average cost premium 1.7% (\$3/sq. ft.)</li> <li>• Integrated life cycle costs: benefits exceed cost</li> </ul>
7.	Rebuild Colorado (2006)	<ul style="list-style-type: none"> <li>• Hard cost premium of 1 – 6% but 2 projects under budget</li> <li>• LEED™ soft costs 0.8% (\$1/ sq. ft.)</li> </ul>
8.	Davis Langdon Report (2007):	<ul style="list-style-type: none"> <li>• Green does not necessarily cost more</li> </ul>

**Table 5-1: The Cost of Green Building: Report Findings**

The following pages highlight the key findings of each study.

#### *1. City of Seattle*

In 2000, the City of Seattle adopted a Sustainable Building Policy requiring new city facilities to attain a LEED™ Silver rating. In 2003, Seattle's Office of Sustainability and Environment chartered a study to evaluate the impacts of the policy on two projects that were nearing completion. The analysis utilized cost estimates above baseline costs for each building for each LEED™ level, over a 25 year life cycle. The City found that the total increase in cost due to LEED™ certification was about 1.2 percent of the combined projected budgets. The report concludes that, "overall the benefits of LEED™ Silver building outweighed the costs, making this a cost-effective policy for the City of Seattle."<sup>175</sup>

## *2. The Cost and Financial Benefits of Green Buildings: A Report to California's Sustainable Building Task Force*

In 2003, California's Sustainable Building Task Force, a collaborative partnership among over 40 government agencies created to oversee California executive order Executive Order D-16-00<sup>176</sup> which established sustainability as a primary goal for state construction, funded an economic analysis to ascertain the costs and benefits of sustainable building. The study collected cost data on 33 LEED™ registered projects in the State of California, including 25 office buildings and 8 school buildings. Detailed cost modeling and budget estimates had been conducted for both green design and conventional design for the same building. The report indicated that while generally there is a green premium for sustainable buildings, it is not as high as generally perceived. More importantly, the study also revealed that while the cost of green buildings tends to increase as the level of greenness increases, overall costs decline with experience.<sup>177</sup>

The overall emphasis of this study is on lifecycle costs; specifically, whether the costs of green construction are outweighed by the benefits. The report concludes that additional upfront costs in green building are a solid investment. In fact, a minimal increase in initial capital for a green building project results, on average, in a life cycle savings of about 20 percent of total construction costs, or more than ten times the initial investment.<sup>178</sup>

## *3. Davis Langdon Adamson: Cost Modeling*

Davis Landon Adamson (DLA) offers a different approach to cost modeling for sustainable design.<sup>179</sup> Rather than looking at proposed LEED™ projects to see how many LEED™ points can be achieved and then cost estimated, they look at the points that could have been added on existing buildings to reach LEED™ certification and then assign a cost for each LEED™ level. In 2003, DLA utilized this cost modeling method with the University of California, Santa Barbara (UCSB) on six existing buildings to determine the feasibility of green building.

	size	cost		Gold	Silver (38)	Certified (32)
rec center	52,000	\$ 12,000,000	46	5.31%	1.06%	0.14%
msrb	60,000	\$ 16,700,000	47	2.38%	0.25%	0.00%
bren	85,000	\$ 19,000,000	48	2.11%	0.08%	0.00%
life sciences	77,000	\$ 23,700,000	45	2.02%	0.32%	0.06%
hssb	156,174	\$ 25,000,000	42	2.43%	0.98%	0.22%
eng sci	92,650	\$ 27,500,000	43	1.39%	0.68%	0.15%

**Table 5-2. Cost Modeling at UCSB<sup>180</sup>**

DLA concluded that it is possible to build LEED™ certified buildings at UCSB for minimal to zero added cost, that Silver is within reasonable reach, and that the cost for LEED™ Gold can vary considerably. The report also states that the LEED™ premium, as a percent of budget, decreases as the building size increases, noting that many LEED™ credits come at a relatively fixed price, regardless of project size. "The findings from this preliminary analysis emphasize the



importance of understanding the impact of location, building type, program, and starting budget on establishing the true cost of green. It is clear that no 'magical' formula exists that can calculate the set percentage premium each LEED™ level will cost for any project. However, the cost of green can be calculated for an individual project.”<sup>181</sup> According to Perrin Pellegrin , UCSB uses this cost modeling to estimate cost for new LEED™ construction on campus.<sup>182</sup>

#### *4. The U.S. Department of Energy*

In an attempt to improve energy efficiency in buildings, The U.S Department of Energy collects and shares data on high performance buildings performance from around the world. In a 2004 case study, a variety of building types, sizes, sites, and factors were researched. Some of the projects are certified green projects; others are noted for their environmental features. The case studies, which can be accessed by their website (<http://eere.buildinggreen.com>), list projects by building type and size, and include actual energy costs.

The Department of Energy also attempts to address the issue of cost, noting on its website that, depending on the design, some high-performance buildings cost less to construct while others with more aggressive design features, such as photovoltaics, can cost more. “Depending on the aggressiveness of the design, experience has shown that it costs no more than 10 percent more to build high-performance buildings.”<sup>183</sup> The site encourages its readers to study the data that has been published by owners who have successfully procured green building within conventional budgets. It also emphasizes the importance of factoring in life-cycle costs and exploring incentives, “Total energy costs are, on average, about 50 percent less than those for conventionally designed buildings. In many cases, the right-sizing of mechanical systems through passive solar design offsets the costs for additional windows or controls.”<sup>184</sup>

#### *5. The U.S. General Services Administration*

In 2004, The U.S. General Services Administration (GSA) commissioned a study to estimate the costs of developing green federal facilities.<sup>185</sup> Using the LEED™ rating system, they looked at the hard and soft costs to build two buildings – a new courthouse and a modernized office building - at three of the LEED™ rating levels (Certified, Silver, and Gold). Hard cost estimates were determined by analyzing identifiable green measures – beyond GSA standards, that would be required to achieve LEED™ credits at each rating level. Soft costs include costs associated with LEED™ specific credits, including increased design scope and documentation.

Based on the tables below, the additional hard costs for the new courthouse, with a baseline cost of \$57,640,000, ranged from a savings of \$199,120 to additional costs of \$4,660,980 (0- 8 percent of budget), depending on the green features chosen. For the office building

modernization, with a baseline cost of \$39,858,000, hard costs ranged from \$545,748 - \$3,243,828 (1 - 8 percent of budget.)

NEW COURTHOUSE (262,000 GSF, Base Construction Cost = \$220/GSF)						
Certified		Silver		Gold		
1A Low Cost	2A High Cost	3A Low Cost	4A High Cost	5A Low Cost	6A High Cost	
LEED CONSTRUCTION COST IMPACTS*						
\$/GSF	(\$0.76)	\$2.16	(\$0.07)	\$9.57	\$2.97	\$17.79
% CHANGE	-0.4%	1.0%	-0.03%	4.4%	1.4%	8.1%

OFFICE BUILDING MODERNIZATION (306,600 GSF, Base Construction Cost = \$130/GSF)						
Certified		Silver		Gold		
1B Min. Facade	2B Full Facade	3B Min. Facade	4B Full Facade	5B Min. Facade	6B Full Facade	
LEED CONSTRUCTION COST IMPACTS*						
\$/GSF	\$1.78	\$2.73	\$3.94	\$5.55	\$10.58	\$10.22
% CHANGE	1.4%	2.1%	3.1%	4.2%	8.2%	7.8%

**Table 5-3. GSA: Hard Costs**<sup>186</sup>

Soft costs were calculated based on the cost of LEED™, including additional design costs, for both expert and experienced design teams. An additional \$107,420 - \$209,600 (0.1 – 0.3 percent) in soft costs was estimated for the new construction and an additional \$125,706 - \$217,686 (0.3 – 0.5 percent) for the modernization.

NEW COURTHOUSE (262,000 GSF, Base Construction Cost = \$220/GSF)						
Certified		Silver		Gold		
1A Low Cost	2A High Cost	3A Low Cost	4A High Cost	5A Low Cost	6A High Cost	
LEED SOFT COST IMPACTS						
EXPERT CONSULTANT APPROACH (\$/GSF)	\$0.41	\$0.46	\$0.41	\$0.55	\$0.61	\$0.80
EXPERIENCED DESIGN TEAM APPROACH (\$/GSF)	\$0.43	\$0.45	\$0.44	\$0.54	\$0.56	\$0.73

OFFICE BUILDING MODERNIZATION (306,600 GSF, Base Construction Cost = \$130/GSF)						
Certified		Silver		Gold		
1B Min. Facade	2B Full Facade	3B Min. Facade	4B Full Facade	5B Min. Facade	6B Full Facade	
LEED SOFT COST IMPACTS						
EXPERT CONSULTANT APPROACH (\$/GSF)	\$0.41	\$0.41	\$0.44	\$0.49	\$0.70	\$0.69
EXPERIENCED DESIGN TEAM APPROACH (\$/GSF)	\$0.35	\$0.35	\$0.38	\$0.44	\$0.59	\$0.58

**Table 5-4. GSA Soft Costs**<sup>187</sup>

In total, the range of additional hard and soft costs of a LEED™ rated project fell between \$306,540 to \$4,870,580 (0.5 to 8.5 percent) for a newly constructed building and \$653,168 to

\$3,453,428 (1.6 to 8.7 percent) for a modernization. As a result of the study, GSA now allocates an additional 2.5 percent for green construction costs. Future projects are encouraged to pursue the highest level of LEED™ certification that the overall budget will allow. The report maintains that, “by including a dedicated green building allowance, the potential for GSA buildings to achieve higher LEED™ rating levels - with the attended benefits - is substantially greater.”<sup>188</sup>

#### 6. *Greening America's Schools: Costs and Benefits*

Capital E, a consulting service in the green energy industry, reached similar conclusions in a 2006 Report, *Greening America's Schools: Costs and Benefits*.<sup>189</sup> The authors find that there is a “green premium,” or initial additional cost, when building green over conventional. By analyzing data provided by architects on 30 school building projects in 10 states, the report concludes that green schools typically cost 1 to 2 percent more, “with an average cost premium of 1.7 percent or about \$3/square foot.”<sup>190</sup> The premium is a result of some of the high-performance features such as photovoltaics, mechanical systems, and more expensive materials. The emphasis of this study, again, was to determine whether the potential benefits of green schools outweigh the costs. Indeed, the report finds that, when factoring in life cycle costs, “financial savings are about \$70 per square foot, 20 times as high as the cost of going green.”<sup>191</sup>

Energy	\$9
Emissions	\$1
Water and Wastewater	\$1
Increased Earnings	\$49
Asthma Reduction	\$3
Cold and Flu Reduction	\$5
Teacher Retention	\$4
Employment Impact	\$2
<b>TOTAL</b>	<b>\$74</b>
<b>COST OF GREENING</b>	<b>(\$3)</b>
<b>NET FINANCIAL BENEFITS</b>	<b>\$71</b>

**Table 5-5. Financial Benefits of Green Schools (\$/sq. ft.)**<sup>192</sup>

#### 7. *Rebuild Colorado*

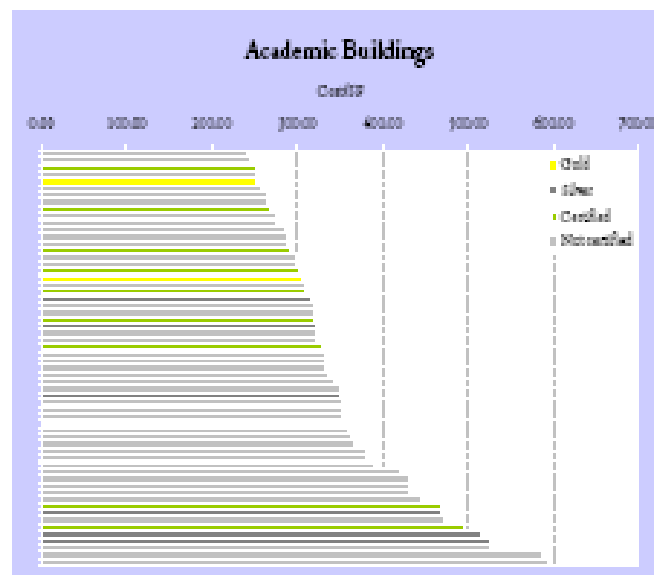
In Colorado, Peter D'Antonio, president of PCD Engineering Services, undertook a study in 2006 as part of Rebuild Colorado, a program under the state's Office of Energy Management and Conservation.<sup>193</sup> The study was designed to examine the cost-effectiveness of LEED™ certification for new construction and the overall cost of building high-performance green buildings. D'Antonio analyzed 11 commercial, academic and government projects pursuing LEED™-NC in Colorado. Overall, he found a hard cost premium of 1 to 6 percent of construction costs, but noted that two of the projects completed under the original budget. The soft costs

related to LEED™ certification, including registration, documentation, energy modeling and commissioning were approximately \$1 per square foot. (0.8 percent) of the construction costs.

#### 8. Davis Langdon Report: 2007

In a 2007 report produced by the architectural consulting group Davis Langdon, Lisa Fay Matthiessen and Peter Morris examine the question of the cost of sustainable design.<sup>194</sup> The report, a follow-up to their 2003 study, “Costing Green: A Comprehensive Cost Database and Budget Methodology,”<sup>195</sup> compared construction costs for buildings where LEED™ certification was a primary goal to similar buildings where LEED™ was not considered during design. A total of 221 buildings were analyzed, 60 of which were academic buildings. Of those, 17 were LEED™-seeking and 43 were non-LEED™. Buildings within common locations and construction timelines were compared.

Overall the findings show that, when comparing average costs for green buildings to non-green buildings, there is no significant difference. Cost variations are due largely to program variation, not sustainable design. Just as in non-green buildings, there are some low cost green buildings and there are high cost green buildings. Those variations fall within the same range as conventional budgets. In fact, many are built with little or no added cost, and, in some instances, green features can actually reduce costs. “For some building types, improvements in energy efficiency can actually lead to reduced construction cost, since the improvements come from reducing dependence on mechanical systems and improving the passive design of the building.”<sup>196</sup> The report goes on to say that this holds true for higher levels of LEED™ certification, and in a time of rising construction costs.



**Table 5-6 The Cost of LEED™ Buildings**<sup>197</sup>

## Summary of Findings: The Issues

The key findings on cost and the broader implications derived from these studies are significant; however, it is important to first acknowledge some of the shortcomings of these studies.

### *Issue #1: What do we mean by the question "Does it cost more?"*

The authors of each of the studies above recognize the problems with trying to determine costs associated with green building projects. Before comparing the analysis of hard and soft costs of green building, we must put into perspective the methods of comparison. Matthiessen and Morris preface their 2004 report not with the question "What does 'green' cost?" but with an even more pertinent question: "More than what?" "More than comparable buildings," they continue, "more than the available funds, or more than the building would have cost without the sustainable design features?"<sup>198</sup> Most of the studies cited above use LEED™ versus non-LEED™ as a basis of comparison, however, non-LEED™ does not equate to non-green. Therefore, how can true comparisons be made? Some of the studies compare baseline budgets of comparable buildings. Are any two buildings comparable? The GSA study, which compared only two structures, acknowledges that the cost estimates reflect a number of project assumptions and that the numbers should be used with caution. In other words, "The cost impacts may not be directly transferable to other project types or building owners."<sup>199</sup> The obvious challenges in drawing true parallels lead to the next issue.

### *Issue #2: There are too many variables*

Several of the authors, as do many industry practitioners, offer the caveat that every building is different - in scope, site, program, design choices, timeline, region, etc. As no two building projects are alike, how can comparisons of cost be made with any accuracy? As Matthiessen and Morris tell us, "The normal variations between buildings are sufficiently large that analysis of averages is not helpful; buildings cannot be budgeted on averages...As the various methods of analysis showed, there is no 'one size fits all' answer to the question of the cost of green."<sup>200</sup>

Even the timeline for the cost studies matter, as construction costs in general skyrocketed in the early 2000's and LEED™ itself (and familiarity of LEED™ among practitioners) has only been evolving since 2000. Many of the studies indicate a learning curve when it comes to green projects, particularly when working through LEED™ certification for the first time. Inexperience adds cost (change in design scope, learning processes, costly change orders). In addition, if architects are unfamiliar with LEED™, or practices and technologies that add performance, they may overestimate cost. The costs of green materials and technologies are also evolving. Says Greg Kats, "Green design, specifically, the relative newness of green technologies and systems can make designers, architects and clients conservative when using them. They may oversize

green building systems and not fully integrate them into the building, thereby reducing cost savings and other benefits. Similarly, cost estimators may add uncertainty factors for new green technologies they are not familiar with, and these can compound, further inflating cost estimates.”<sup>201</sup>

*Issue #3: Using LEED™ as a barometer may skew cost estimates*

While each study uses LEED™ as the benchmark for green, it does not factor in the sustainable intent of projects that do not pursue LEED™ credits. Other buildings may have earned “green points” by virtue of their basic design, or because they were meeting an alternative mandate, whether LEED™ was a primary goal or not. In addition, some green projects, especially those going for LEED credits, are being designed as showcase projects. As Greg Kats notes in *The Cost and Financial Benefits of Green Buildings*, “Some green buildings being built today are showcase projects that may include additional and sometimes costly ‘finish’ upgrades that are unrelated to greenness but that nonetheless are counted toward the green building cost increase.”<sup>202</sup>

*Issue #4: Enough LEED™ buildings for statistical significance?*

Are there enough LEED™ buildings, especially in academia, to provide meaningful comparative data? The 2006 Davis Langdon study states that based on their findings, LEED™ Gold may be the most cost-effective green building strategy. The authors admit, however, to too small a number of LEED™ Gold buildings in its study to provide for a meaningful statistic.<sup>203</sup> The GSA study compared only two mid-rise buildings, with different baseline budgets, and different design needs - one was a new construction, one a modernization. Again, their report notes that they are not sure if their findings would translate to smaller or larger buildings.<sup>204</sup> Greg Kats, in *The Cost and Financial Benefits of Green Buildings*, studied buildings only in the State of California (although his 2006 report selected buildings from multiple states and achieved similar results).

*Issue #5: Energy performance based on predicted assumptions not actual design*

The studies that use life cycle costs on LEED™ buildings to determine cost-effectiveness are making recommendations based on assumptions, not actual energy performance. In fact, LEED™ certification for new construction does not require actual performance data.

*Issue #6: The timing of these studies*

Over the time period these studies were conducted, overall construction costs were rising. LEED™ and the practice of sustainable design and construction were also evolving. All of these factors influence cost comparisons. In 2009, we are quite possibly entering an era of declining costs – both in terms of construction costs due to the economic recession and the costs of green materials and technologies. A recent RS Means report found that construction costs in the U.S.

declined 2.4 percent on an annualized basis from October 2008 to January 2009. The company also noted decreases in the cost of materials.<sup>205</sup> According to a recent report from BusinessGreen.com, the price of solar panels could fall by as much as 40 percent by the end of the end of 2009, due to an increase in polysilicon supplies.”<sup>206</sup> Says architect Jonah Cohen, “the costs [for green building] are definitely going down for institutional projects, city projects and government agencies – it seems like it’s becoming the norm.”<sup>207</sup>

In addition, the federal government and many state governments are driving sustainable building practices, by mandate and through incentives. As sustainability becomes more a part of the national mindset, demand for green materials and technologies have the potential to drive down cost - or at least attitudes about cost. James Goldman of Turner Construction says, “cost is always a barrier – both construction cost and the cost of services for studying green options and for certifying the projects. Nevertheless, in five years green building will be ubiquitous.”<sup>208</sup>

### **Summary of Findings: The Broader Implications**

While it is important to put the findings from the cited studies into perspective, the quantitative evaluation of the costs and benefits of green design can be used to guide Cal Poly administrators when making decisions about levels of building performance. In addition to an improved understanding of cost, there are several important broader implications that emerge from the full reports that have the potential to shift our thinking not only about cost but about how we may be able to realize higher performing buildings on the Cal Poly campus. Those implications, including how each applies to Cal Poly, are summarized below.

*In general, LEED™ Silver can be reached within conventional budgets, but the higher the LEED™ level, the higher the cost of construction*

While most of the studies indicated that green costs were based on the project, in general, the data from these studies point to higher upfront costs for LEED™ Gold and Platinum projects. Matthiessen and Morris note that “a majority of the buildings we studied were able to achieve their goals for LEED™ certification without any additional funding.”<sup>209</sup> It is no accident that many of the organizations used these cost studies to establish a LEED™ Silver green building guideline.

The struggle remains for higher performance buildings. While there were some exceptions, most buildings designed beyond LEED™ Silver required additional funding. This was usually due to specific sustainable features, such as the installation of a photovoltaic system.<sup>210</sup> In *Green Building Revolution*, Jerry Yudelson states that “while it is possible to build at a LEED™ certified level (and sometimes LEED™ Silver) building at no additional cost, as building teams try to make

a building truly sustainable, cost increments often accrue.”<sup>211</sup> Additional costs are a result of design choices such as green roofs, certified wood products and photovoltaics, and more sophisticated and costly technology and mechanical systems.

Cal Poly’s experience mirrors the findings in these studies. Despite the funding source, new construction has achieved LEED™ Certified or Silver (or equivalent) levels while opportunities to enhance green features have been thwarted, it is said, because of cost and funding limitations.

*Cost Reduction and Efficiencies through Integrated Design, Standard Procedures and Experience*  
Each of the studies reviewed underscore the significance of integrated design. According to *The Costs and Financial Benefits of Green Buildings*, the majority of cost premiums in the California buildings examined resulted from the increased design time needed to integrate sustainable building measures on the back end. “The thing about green buildings is that they are much more cost effective if you do them as a whole rather than piecemeal,” says Greg Kats. “The key is to start very early, include everyone, and have senior management take the lead responsibility on greening.”<sup>212</sup> In *Greening America’s Schools*, Kats concludes that early integrated design is required to achieve full cost savings.<sup>213</sup>

Integrated design is a collaborative approach to design and building that involves key stakeholders from project beginning through completion. Typically, the key players involved include the architects, engineers, and construction managers. At a university, it would also include facilities staff. Green building goals would be identified, analyzed, and understood early in the process, and adhered to by all parties throughout. Advocates of green design observe that integrated design reduces cost. In fact, the National Institute of Building Sciences states that the only way a high-performance building can be achieved is through an integrated design approach.<sup>214</sup> Leith Sharp, director of the Harvard University Green Campus Initiative, says “We’ve focused a lot of energy on reducing cost associated with green building design through effective process management. As a result, we’ve just completed a LEED™ Platinum project that had no added cost.”<sup>215</sup> Says Sharp, “With a full commitment to integrated design and an experienced development, design, and construction team, the total costs for the mechanical and electrical systems were about \$3.5 million below the initial budget estimates from the general contractor.”<sup>216</sup>

In *Marketing Green Building Services*, Jerry Yudelson notes, “Often the ‘design-bid-build’ process of project delivery works against the development of green buildings.”<sup>217</sup> At Cal Poly, the typical non-state projects require 3 - 5 years from the initial planning phase to project completion.<sup>218</sup> State and state-private (hybrid) projects may require even more time, as they depend on the passing of bond measures. This results in a significant time lag between planning estimates,



appropriation of funds, and bids. According to Bob Kitamura, Cal Poly traditionally had a design-bid-build process whereby architects were hired to draft a preliminary design but the design was taken out to bid at a later date for separate construction contractors in a low bid process. The integrated design model, which is a significant part of sustainable building, rarely works in this scenario. When the contractor is not involved with the design portion of the process, the team starts out dysfunctional and it is extremely difficult to catch up. The time lag is not the issue; it is the lack of continuity of the team from the start of design.<sup>219</sup> In addition the low bid process gives no incentives for contractors to add green features.<sup>220</sup>

The university is moving however toward a CM (Construction Management) at Risk model and Design Build model. In CM at Risk the design architect and contractor are hired at the same time. All costs are known up front, starting from the schematic design. There is a commitment from the contractor to deliver the project within a guaranteed maximum price. If over budget, the project team adjusts the scope of the project to fit within the budget.<sup>221</sup> In Design Build, the university hires an architect for the conceptual design who is a bridging architect for the project. A bid goes out for a contractor/architect team who come back with a guaranteed price on what the project will cost. In Design Build, which was the model for Poly Canyon Village, the earlier the cost is guaranteed, the better. Both CM at Risk and Design Build work well with the integrated design model, and have proven to be more cost effective. With the move toward an integrated design process, and a commitment from key players to incorporate green features early in and throughout the process, Cal Poly has already addressed a key factor that has the potential to bring the university closer to achieving higher levels of building performance in new construction – even within the current funding structure.

Once a system of integrated design has been established, and especially if a LEED™ certification has also been established as a priority, documenting methods and developing standard procedures are essential in establishing a cost-effective process. Several of the studies speak of the importance of a well-documented consistent approach. According to the GSA report, “the implication derived from the Courthouse and Office Building models is that GSA’s green building costs can be managed, and to some degree predicted, if a consistent approach is applied from project to project.”<sup>222</sup> The evaluation conducted by the City of Seattle called for a standardized process early in the design process, specifically for selecting the most suitable LEED™ credits. The report also recommended documentation of the design process, including costs and benefits, as a means of providing rationale for future design choices.<sup>223</sup>

In *The Cost and Financial Benefits of Green Buildings*, the authors identify a trend of lower construction costs with more experienced design teams. As lead author Greg Kats notes, “This trend suggests that California develop policies and procedures to favor the hiring of more

experienced green building teams, and that this experience be embedded throughout the design team. Additionally, development of multiple green buildings within a particular California State agency or university can be expected to result in declining costs per building to that organization.”<sup>224</sup> In *Marketing Green Building Services*, Yudelson observes that accumulated project experience combined with a focus on integrated design lowers costs.<sup>225</sup> Says Yudelson, “the commercial and institutional green building market continues to grow by more than 50 percent per year....(as) the growth of the market tends to accelerate; as more green projects are built, costs are reduced, leading to more cost-effective projects, which tips the scales in favor of building even more projects.”<sup>226</sup>

Cal Poly facilities teams are also gaining experience in green building which has allowed for the improvement and documentation of methods. The experience with the Center for Science and Mathematics construction project, for example, offers a valuable lesson in adopting LEED™ certification as a goal. According to Barbara Queen, Facilities Planning organized a charrette that included architects, engineers, administrators, faculty, staff, and students. Representatives from Lawrence Berkeley National Laboratory, armed with the EPA developed innovation credits for labs, known as Labs21<sup>227</sup>, were also in attendance. A goal of LEED™ Silver certification was set, although, as Queen admitted, they didn’t know who would pay for the certification. When they reached a milestone in the process, says Queen, they met with the architects to review where they were in the design and budget process. When they reviewed the initial list of green goals, the architects stated that LEED™ services were not part of the contract. The architects, though told of the LEED™ certification goals, had not documented the process and, since it was not included in the original budget, it would now cost extra (and is now prohibitive). Queen believes that they can learn from this experience to be more explicit about LEED™ certification requirements and to ensure that the documentation requirements, not just the design goals need to be in the contract. She also thinks that Facilities Planning can better negotiate green building certification in the future and save cost. Had the processes involved in LEED™ certification been there from the beginning, facilities could have budgeted for it. “Facilities,” states Queen, “needs to set the green goal from the beginning. It must precede the program and it must be integrated throughout.”<sup>228</sup> ...Similarly, says Queen, “We don’t have integrated systems to say ‘how would this green idea go together with this building?’”<sup>229</sup> A sustainability master plan would not only define sustainability goals, it would offer a standard process for sustainable new construction based on best practices and past experiences on campus.

We can also learn from the experiences of other universities. In an interview with Richard Bowen, Associate Vice President of Economic Development at Northern Arizona University, Bowen revealed that their first LEED™ Platinum building had a 10 percent green premium. Now, Bowen

claims, “they know what they are doing.”<sup>230</sup> This includes the relationships that they have developed over time. “With two large LEED™ projects in progress,” says Bowen, “the cost will not be higher than the conventional budget.”<sup>231</sup> This is exactly what occurred at the Bren School of Environmental Science and Management at UCSB. Jennifer Deacon, Assistant Dean of Development at UCSB, explained that the project was 2 percent over budget – all because of the fact that green goals had not been integrated from the beginning – and they had to do many change orders. Deacon said that they continue to learn from their experiences and have also developed relationships over time which has streamlined the process. Her office now has a list now of green vendors who are strategic partners in green building on campus.<sup>232</sup>

#### *Emphasis on Life-Cycle Costs*

Several of the studies determined the cost of green by factoring in life cycle costs. In *The Cost and Financial Benefits of Green Buildings*, Greg Kats concludes: “From a life cycle savings standpoint, savings resulting from investment in sustainable design and construction dramatically exceed any additional upfront costs.”<sup>233</sup> He reiterated this point in *Greening America’s Schools*, calculating the costs savings over time for school districts who invested in sustainable design. The City of Seattle utilized life cycle analysis to support its policy decision that city facilities be designed at LEED™ Silver. By factoring in life cycle costs during the design process, we change the way we think about cost.

Both the State of California and the CSU Chancellor’s Office seem to recognize the importance of life cycle costs. In 2001 (updated in 2003), the California State and Consumer Services Agency and Sustainable Building Task Force produced *Building Better Buildings: A Blueprint for Sustainable State Facilities*, a report containing a 10 point plan to implement California’s Executive Order D-16-00.<sup>234</sup> The Blueprint included many of the common themes found in the cost studies above, for example, the incorporation of lifecycle costs, adoption of integrated design, and the development of standard modes of operation. In addition, the *Blueprint* made specific recommendations for California including a call to modify the state’s capital outlay process to incorporate more sustainable building practices for state facilities.

I contacted Greg Dick, a member of the California Integrated Waste Management Board, about the *Blueprint* and its relevance to the CSU system.<sup>235</sup> Specifically, I wanted to know whether the *Blueprint* related to all state facilities, including the California State University system. I inquired about the *Blueprint*’s recommended actions to integrate lifecycle costs and to evaluate the state’s capital outlay process in support of sustainable building. Had there been any discussion about combining funding for capital projects and operations?

Dick claimed that the California State University system was encouraged to participate on the former Sustainable Building Task Force, and that there had been CSU representation.

Unfortunately, he noted, the goal to include lifecycle costs has not been achieved, nor has the goal to re-evaluate the state's capital outlay process. Integrating lifecycle costs, while critical, does not impact the bottom line for capital projects, since, as noted earlier, capital and operating budgets receive funding from separate sources and, therefore, cannot "gain" from energy cost savings. There is little incentive – in fact, one could argue there is a disincentive to design smart buildings. Instead, facilities services spend state funding to conduct energy audits and to retrofit buildings to be more efficient. Rather than integrating building life cycle in new construction, it is a cycle of lost opportunity, waste, and, some would say, frustration.

#### *The Strategic Use of LEED™*

I found it interesting that several of the studies make recommendations to standardize the process of LEED™ credit selection early in the process. The GSA report notes that LEED™ has many low and high cost credits that earn 1 point each but that can have a significant impact on budgets. It recommends a structured approach that would help set realistic LEED™ goals, including identifying all LEED™ credits that would automatically be earned based on GSA design standards and incorporating all appropriate no or low cost LEED™ credit options such as product choices.<sup>236</sup> Similarly, SBW Consulting recommends in its report to the Seattle Office of Sustainability and Environment that "city projects could benefit from a standardized process early during the project design for selecting the most suitable LEED™ credits."<sup>237</sup> Davis Langdon also provides a guideline for selecting LEED™ credits that include determining the points that are already incorporated into the design of the building, pinpointing where the most difference can be made, and estimating the likely premium cost for the level of LEED™ certification anticipated.<sup>238</sup>

This implies that costs can be maintained in the pursuit of green through the prudent selection of LEED™ credits. "Data from this study shows that many projects are achieving certification through pursuit of the same lower cost strategies, and that more advanced, or more expensive strategies are often avoided. Most notably, few projects attempt to reach higher levels of energy reduction beyond what is required by local ordinances, or beyond what can be achieved with a minimum of cost impact."<sup>239</sup> If seeking the "easy" credits becomes the norm, then why not just settle for LEED™ Silver buildings? As Dan Heinfeld, president of LPA, Inc., observes, "We don't need hundreds of sustainable buildings in the future; we need thousands. We're not in a situation where we need demonstration projects. Every building needs to use less energy and less water."<sup>240</sup>

The fact that each study used LEED™ as common barometer for green is also significant. LEED™ is frequently cited as the most credible and recognizable benchmark (indeed, the "gold

standard”) for green building in the United States. In *The Cost and Financial Benefits of Green Buildings*, lead author Greg Kats states that, “although imperfect and still evolving, LEED™ has rapidly become the largest and most widely recognized green building design and certification program in the US, and probably in the world.”<sup>241</sup>

In 2004, Jerry Yudelson conducted a web-based higher education survey of 1000 campus planners, architects, and facilities directors on sustainability goals<sup>242</sup>: Of the 200 who responded, 89 percent had projects with sustainability goals, and nearly half had specific LEED™ goals. For new construction, LEED™ certification was a goal for the majority of projects. Eighty-seven percent said that increased costs, whether real or perceived, was the primary barrier. Indeed, if the Center for Science and Mathematics were to continue to pursue LEED™ Gold certification, it would have to raise an additional \$325,000 (albeit just 0.3 percent of the overall budget).<sup>243</sup>

As noted in Chapter Four, both the State of California and the CSU have mandated a goal of LEED™ Silver equivalent for all new construction, even though alternatives (to be discussed in the next chapter) exist. In 2007, the California State Legislature supported two propositions, AB 35 (Ruskin) and AB 888 (Lieu), that would have granted authority to the United States Green Building Council (USGBC) to establish LEED™ as the building standard for state facilities. The Governor vetoed the bill,<sup>244</sup> however, LEED™ standards remain a standard.

Could the adoption of LEED™ certification raise the profile of green campus construction projects? If so, does that recognition translate to a more marketable -and, therefore, more fundable - green building project? (I will discuss this question, as well as some of the advantages and disadvantages of LEED™ in the next chapter).

#### *Leadership is Critical: Placing a Value on Sustainability*

In a review of the *Cost of Green Revisited* for the AIA, Pauline Souza writes, “There is a greater understanding that true sustainable design can be achieved if the desire is there and the value of sustainable approaches and systems is recognized. When sustainability is valued it does not ‘cost’ more because it is as much a part of the project as any other project component – any wall, window, or door. Factored in at a programmatic level, green cannot be parsed from its integrated whole or singled out as a line item. Going green does not put a project above budget because the project’s budget is built around it. Conversely, if sustainability is not part of the value system, it will always be perceived as costing more.”<sup>245</sup>

The message is that sustainability is a program issue, not a design issue. First, sustainable features are too often tacked on to a project as an afterthought, making them appear as an added cost. More importantly, if sustainable building is adopted as a core value and is integrated in the

architectural program early on, it is not viewed as an add-on cost or as a line item on a budget. As Jerry Yudelson notes in *The Green Building Revolution*, “if sustainability is not a core purpose, then it’s going to cost more; if it is essential to the undertaking, then costs will be in line with non-green buildings of the same type.”<sup>246</sup> If sustainable design continues to be discussed as a separate feature, rather than an integral part of the planning process, additional costs will always be implied. In reviewing Davis Langdon’s 2006 study, Tim Kaufman surmises, “Building green doesn’t cost more...green building does require a different mind-set, however.”<sup>247</sup>

CSU Chancellor Charles B. Reed recently stated that “California’s continued economic, environmental and social prosperity depends on sustainable energy and technology...as the nation’s largest university system, the CSU welcomes this opportunity to lead the way.”<sup>248</sup> Indeed, as described in Chapter Four, the CSU has offered leadership in the green building revolution, starting with Executive Order 987, which set the guideline to build at LEED™ Silver equivalent (most likely after evidence was presented to both the state and the CSU that LEED™ Silver can be constructed within conventional budgets). Leadership is also reflected in the establishment of a system-wide Sustainability Advisory Committee, the development of The CSU Program for Environmental Responsibility (CSU-PER) (see Chapter Seven), and the promotion of sustainable practices among campuses. The addition of a 3 percent line item to the capital outlay budget for sustainable design and sustainable site development (described in Chapter Three) is evidence of a commitment to higher performing buildings. (Ironically, this only perpetuates the perception that green costs more).

Has this leadership translated to the campus level? Scott McNall, Director for the Institute for Sustainable Development at Chico State, claims that Chico State was the first CSU campus to tell the CSU Chancellor’s office that they were going for LEED™ certification for a new construction project, the Student Services Center (SSC). The center, in fact, achieved LEED™ Gold certification, and was, according to McNall, the first LEED™ certified building in the CSU system. How did they do it? McNall says that it was all about leadership; from the administration and from the students. The President, Provost, and Vice President for Finance share a major commitment to sustainability and understand the value that it imparts to students. “The leadership at Chico State,” says McNall, “said “this will be done. And it was.”<sup>249</sup>

At Humboldt State University, the leadership was pushed by their students. According to Frank Whitlach, Associate Vice President for Marketing & Communications at “Humboldt is a tree hugging campus; the university gets pushed by its students.”<sup>250</sup> Humboldt actively promotes sustainability as a core value, and is committed to constructing all new buildings to at least

LEED™ Silver standards. In 2008, the Behavioral and Social Sciences Building received a LEED™ Gold certification.<sup>251</sup>

In 2001 and 2003, Los Angeles voters approved over \$2.2 billion in bond funding “to renovate, modernize and improve all nine colleges within the Los Angeles Community College District (LACCD).”<sup>252</sup> In 2002, in the early years of LEED™, the LACCD Board of Trustees made a bold move and adopted a sustainable building policy which mandated a LEED™ certified goal for all new construction funded at least in half by bond dollars. “A key component of LACCD's modernization and new construction program is to ultimately make each campus “energy independent” and go “off the grid” by reducing energy demand and supplying all remaining energy needs from alternative sources.”<sup>253</sup> Per Mark Hunter, Executive Director of Facility Services at Cal Poly, “this is an exemplary case of leadership, where a goal was committed to and they stood united throughout.” He continued, “Sustainability was the #1 focus of all renovations – even at the cost of classroom size.”<sup>254</sup> Hunter also points to Chico State as an example. Sustainability, in his opinion, has turned Chico around. “Why isn’t Cal Poly being a leader – especially with the top reputation of its architecture school?”<sup>255</sup>

The Center for Science and Mathematics, still struggling to bring in the final funding it needs to break ground, is just a few points shy of LEED™ Gold. The project’s manager, Barbara Queen, said that they knew early on that there would be a LEED™ certified goal and that there was even a commitment initially to pay for the LEED™ certification process.<sup>256</sup> Though the building has been designed at LEED™ Silver equivalent, funding shortfalls put actual LEED™ certification at risk. The Vice President of Finance and the Vice President of Advancement have asked the advancement team not to pursue funding for the certification.<sup>257</sup> In addition, the features that would earn the building a LEED™ Gold rating (not to mention make the building more energy efficient) such as the green roof, will not be incorporated. In line with the cost studies, the higher level of LEED™ certification coupled with the additional soft costs of LEED™ documentation, adds an upfront cost. Bob Kitamura asks, “What is the priority? If the President and/or Provost said “Gold,” the building would be Gold.”<sup>258</sup> Mark Hunter concurs, “If the President, Provost and Deans commit to sacrifice on behalf of green, it would happen. Cal Poly needs a really strong champion to keep an eye on sustainability priorities. Green is always the first to go when funding decreases.”<sup>259</sup> The good news, says Hunter, is that sustainability is listed as one of the top six goals in the draft of the campus strategic plan.

Cal Poly is currently drafting a strategic plan that will guide the university over the next five years on its path to be “the 21<sup>st</sup> century polytechnic university.” Sustainability is listed as one of the primary strategic goals:

- **LEAD IN SUSTAINABILITY:** Cal Poly will lead in sustainability through the educational preparation of our graduates, the research and scholarly contributions of our faculty, and the practices used throughout the university.<sup>260</sup>

What does it mean to lead in sustainable practices? Is it a continuation along the current path of building to LEED™ Silver equivalent or, as is often the case, to be as sustainable as the project budget will allow without sacrificing program space? Or does it mean that the university's leadership is willing to make a commitment to high performance buildings; that they will support a shift in policy and practice to ensure that green goals are always the priority and not sacrificed when funding falls short? Erling A. Smith, Vice Provost for Strategic Initiatives and Planning, acknowledges that the strategic plan is still a work in progress, and that it has yet to present a bold vision.

As the university nears completion of its strategic plan, how will "leadership in sustainability" be defined? What better exemplifies the "21<sup>st</sup> century polytechnic university" – a university with LEED™ Silver equivalent buildings or LEED™ Platinum buildings? The President's office and the new strategic plan must be specific about the vision for sustainability when it comes to new construction on campus. In addition, that vision needs to be university-wide, not project based. Cal Poly's strategic plan should be followed by a sustainability master plan that is clearly understood and adopted by all.

## **Conclusion**

When it comes to constructing buildings at a LEED™ Gold rating or equivalent, Cal Poly's experiences (as well as the report findings cited in this chapter) have reinforced the perception that the greener the building, the higher the cost. Therefore, new construction funded primarily through state dollars has not supported higher rating levels. In addition, as with most public universities, the reduction of lifecycle costs, while a value, does not result in reduction of upfront costs, as most states separate their capital and operating budgets. While life cycle analysis is mandated by the CSU for new facilities, it is not practically integrated. Therefore, these findings, while compelling, do not remove the obstacles of funding the upfront costs of higher level green building projects. Cash is cash. A 2 percent premium on a \$50 million project is still a lot of capital to raise. LEED™ certification, while seemingly the "gold standard", costs money.

Yet other CSU campuses – subject to the same funding model as Cal Poly - are building LEED™ Silver and Gold certified buildings. Here is where a key facet of Cal Poly's funding paradigm begins to emerge: the university's understanding of cost and the decisions that are based on that understanding. First, while there is a green premium it is not as high as generally perceived and,



in some cases, high performance buildings do not cost more. Second, costs can be reduced. By incorporating green goals from the beginning and adopting measures such as integrated design and standard procedures, overall project costs will be reduced. Costs are also driven by the cost of green materials and labor, both of which are projected to decline in the current year. Cal Poly's Facilities Planning has moved toward a more integrated design approach with its shift toward CM at Risk and Design Build strategies, sustainability charrettes, and involvement of key players from Facilities Services and the campus sustainability planner. Cal Poly Facilities staff is gaining more experience, not only in terms of their own processes, but in selecting and working with the right architecture/engineering teams. Both of these factors are known to reduce cost.

Third, the benefits always outweigh the cost. While the university is not compensated for reducing life cycle costs in new construction, its leaders could consider themselves to be an integral partner in reducing the state's economic and energy burden. Fourth, several projects use LEED™ strategically, selecting points that could be obtained more cost-effectively without minimizing the green goals for their buildings. Similarly, as experience is gained in the LEED™ process and as relationships are developed, the overall cost of documentation decreases.

Leadership and collaboration at the campus level is imperative in adopting all of these more cost-effective strategies. By confronting the cost perception, Cal Poly's administrators will be better equipped to make decisions about how green a building will be or about paying for LEED™ certification. For Cal Poly, without a clear campus definition of the sustainable building goals that will distinguish it as a 21<sup>st</sup> century polytechnic university, it will be challenging to move beyond the performance level of LEED™ Silver equivalent for projects funded within the traditional state funding structure. If a Cal Poly major capital project cannot take full advantage of the cost savings and standards outlined above, and if state funding continues to decline, it will need to identify alternative streams of revenue to achieve higher levels of building performance.

## Chapter 6

### Funding Green Buildings on Campus

Another component of the funding paradigm is how we, as a university, actually think about funding capital projects. At Cal Poly, the conversation seems to center on how much money the project will get from the state. As an inextricable part of the state, perhaps the conversation should shift to how we can leverage bond money to find innovative solutions to build high performance buildings. It is a campus responsibility as much as it is the responsibility of the Governor's office to steward tax dollars effectively. David Orr writes of Oberlin College that, to be successful, "sustainable practices must be independent, not college run or funded."<sup>261</sup> The first step is to integrate the lessons from the studies in Chapter Five and from best practices of comparable universities to minimize costs and maximize opportunities to integrate more high performance features. The second step is to think creatively about alternative sources of revenue and to commit the resources to pursue them.

#### Funding Alternatives

##### *Student Fees*

AASHE lists universities and colleges that have successfully implemented student fees to fund renewable energy and energy efficiency projects.<sup>262</sup> In each case, students voted overwhelmingly for a per semester or quarter fee. For example,

- The College of William and Mary – a \$15 green fee with 85% approval by voting students
- Evergreen State College - a \$1 per credit fee increase with 91% approval by voting students
- Middle Tennessee State University and Tennessee Tech- an \$8 per semester fee increase with 89% approval by voting students
- University of Colorado at Denver, Metro State University and Community College of Denver - a \$1 per semester increase with 95% approval by voting students
- University of Oregon - a \$2 fee increase per quarter with 81% approval by voting students
- University of Wisconsin a, La Crosse – a \$5 per semester increase with 89% approval by voting students
- University of Colorado (CU) at Boulder - a \$1 per semester fee with 83% approval by voting students
- UC Santa Cruz - a \$3 per quarter fee increase with 69% approval by voting students

Students from other California schools also voted to impose a student fee for sustainability, including:

- UC Santa Barbara – a \$2.60 per quarter student fee with “an overwhelming majority of students” approving<sup>263</sup>
- UC Berkeley - a \$5 per quarter student fee with 69% of voting students approving<sup>264</sup>

- Humboldt State University - a \$10.00 per semester student fee<sup>265</sup>
- UC Los Angeles- a \$4.00 per quarter student fee<sup>266</sup>

According to Dennis Elliot, Manager of Engineering & Utilities at Cal Poly, the campus was recently on the verge of implementing a student based sustainability project fund.<sup>267</sup> ASI put together a proposal to start “The Green Initiative Fund” (TGIF) at Cal Poly, modeled after UCSB, UCLA, and Berkeley. ASI Sustainability Office, Tyler Hartrich, pointed me in the direction of the TGIF website ([www.tgifcalpoly.org](http://www.tgifcalpoly.org)) which explained the initiative and provided the results of a student petition regarding the university’s sustainable practices. TGIF proposed a \$5 per quarter student fee at Cal Poly that would generate close to \$300,000 to support renewable energy, energy efficiency building retrofits, water conservation measures, sustainable transportation, expanding recycling/composting, and fund sustainability internships. Unfortunately, the referendum was rolled into another student fee measure and was rejected by the administration due to the current budget crisis and a need to protect academic programs.

#### *Alumni and Student Gifts*

An alumni sustainability fund was initiated by various alumni groups of UC Berkeley who saw potential in a sustainability-oriented fundraising campaign aimed at environmentally concerned alumni. The campaign is targeted at non-donors and infrequent donors and is designed to raise awareness of and funds for Berkeley’s Green Campus Fund and other sustainable projects on campus.<sup>268</sup> Stanford University’s Graduate School of Business started a Campus Sustainability Fund to support the sustainable goal of the new Knight Management Center Campus. The project leaders are pursuing LEED™ certification for the entire campus, including a goal of a LEED™ Platinum rating for the design of the new Knight Management Center.<sup>269</sup> The University of Connecticut’s Green Campus Fund has raised approximately \$15,000 (albeit a small amount), primarily from faculty and staff, since its inception in 2006.<sup>270</sup> Cal Poly has not pursued an alumni or faculty/staff supported fund.

Last year’s senior class at the University of Washington chose the Endowment for Sustainability and Environmental Stewardship as the recipient of their senior class gift. Seniors were encouraged to consider making a gift of \$20.08, to correspond to their graduating year.<sup>271</sup> The University of North Carolina’s senior class supported the UNCW Sustainability Fund, “which enhances sustainable practices at the university.”<sup>272</sup> The University of Delaware offers a list of suggestions on green projects and activities that could be funded through a senior gift.<sup>273</sup> At Cal Poly, the newly formed Students for Philanthropy have re-instated the senior class gift. The gift from the Class of 2009 will provide additional bike racks on campus.

### *Student Projects*

An environmental science class at Cleveland State University decided to complete a green roof project when original funding fell short. The new recreation center, A LEED™-certified building, was designed with the intention of having a 7,000 square foot green roof. Since the roof had been designed to accommodate a garden, the class decided to adopt the project and held a fundraising event to raise money and awareness for their efforts.<sup>274</sup>

At Cal Poly, the Center for Science and Mathematics at Cal Poly is designed for a green roof, but construction will most likely fall short due to lack of funding. The Davidson Building Renovation Project, slated to break ground in 2015 could be designed with a green roof – with student designs scheduled from the beginning. The roof could be designed as a profit center, perhaps as a food service or event space, returning money for the maintenance of the building, including technology upgrades. By turning the green aspects of the project, such as a green roof into a student project, the prospect of separate program funding may be increased.

### *Green Building Loan Fund*

The American Association for Sustainability in Higher Education (AASHE) notes the benefits of green loan funds, including the reduction of the negative environmental impact of the college or university, savings to the college, and the education and empowerment of students.<sup>275</sup> In 2000, Harvard University established the “Green Campus Loan Fund,” to provide capital for high performance campus design, operations, and maintenance and occupant behavior projects.<sup>276</sup> The funds come from the Harvard “bank” as an interest-free loan, with a payback period of 5 years or less for existing buildings and 10 years or less for renovations and new construction. Payback funds come from the savings achieved on energy, waste removal and overall operating costs. The fund began with a \$3 million allocation, for an average return on investment of over 30 percent. By April 2006, the fund had reached \$12 million, due to additional investments for the university’s president. Former Harvard President Summers claims that, the best investment in the university is not the endowment but the Green Loan Fund.”<sup>277</sup>

I think it is safe to assume that most universities do not have a \$12 million line of credit in reserve to offer as a loan. In addition, many state assisted universities like Cal Poly face the same barrier of separate budgets for capital and operating expenses. Are there alternatives?

In “Creating a Campus Sustainability Revolving Loan Fund,” AASHE highlights creative methods used by other universities. The University of Michigan, also unable to bridge capital and operating costs, established an alternative model to finance sustainability projects on campus. The university’s Energy Conservation Measures Fund (ECM Fund) was established in 1987 with \$2 million in seed funding from the General Fund Utilities Budget to fund conservation measures

in General Fund buildings.<sup>278</sup> Initially, estimated cost savings on funded projects were calculated and the balance was deposited into the fund at the end of each fiscal year. In time, the reimbursements were eliminated in favor of a straight allocation of \$2.5 million from the General Fund Utilities Budget. The \$2.5 million number was based on projected “annual savings of up to \$5.7 million that would come with the allocation of \$2.5 million dollars annually over a 6 year period.” Currently, the annual allocation is \$1.5 million, again based on projected returns, and funds approximately 50 projects a year.

UC Berkeley’s Green Campus Fund, created by the Chancellor’s office, provides both loans and grants to “create a greener, more environmentally sustainable campus - while saving resources and money in the process.”<sup>279</sup> Grants, currently limited to \$10,000 per project, are offered on a competitive basis for smaller campus projects. For projects that estimate costs savings for the university, the fund also functions as a revolving loan fund.<sup>280</sup> The University of Maine’s Green Loan Fund, which provides no-interest loans of up to \$300,000 annually to departments, was established by the University of Maine Foundation. Cost savings are calculated and used to repay the principal over a 5-year period.<sup>281</sup> The University of Connecticut Foundation also created a green campus fund to support some of the upfront costs of sustainable enhancements for new construction and renovation projects.<sup>282</sup>

Many of these funds support retrofit projects and would not be large enough to support energy conservation measures on new construction. At Cal Poly, according to Dennis Elliot, we do not have such a fund for retrofits set aside. He has to go to the campus Vice President of Finance to request funding for all energy projects.<sup>283</sup> Elliot shared, however, that Cal Poly’s Housing Office has implemented a Sustainability Fund, in which they intend to set aside savings achieved by energy conservation projects for financing of future projects.<sup>284</sup> Obviously, this method works when the budget is self-contained. It would be interesting, however, to consider, a green loan fund from the State’s general fund, the CSU Chancellor’s office, or private donors.

### *Green Bonds*

As discussed earlier, Los Angeles voters approved over \$2.2 billion in bond funding to renovate and modernize all nine colleges within the Los Angeles Community College District. In 2008 the State of California Treasurer’s Office proposed a green bond to equip state buildings – including those that are part of the California State University system - with technology, such as solar panels, and other measures that would reduce the state’s carbon footprint while producing renewable energy. “My plan,” said California State Treasurer Bill Lockyer, “calls for investing \$3.5 billion in solar energy as part of a \$5 billion bond package to green state government buildings, expand use of renewable energy, increase energy efficiency and spur innovation and cost-reduction in California’s green technology industry.”<sup>285</sup> Lockyer believes that bonds are the

“fastest and most efficient method to cut through outmoded procedures for budgeting and contracting that are currently holding back green building construction projects.”<sup>286</sup>

According to Deputy Treasurer Bettina Redway, the proposition was brought to the legislature – not voters. Because of the economic crisis of fall 2008, it was dead on arrival. “Legislators did not agree that it was important enough to push through now,” said Redway, “Right now, we are just trying to manage cash flow in.”<sup>287</sup> The bonds would have paid for the retrofitting of existing buildings, not new construction. Redway believes that modernization is more of a significant problem than new construction. The state already has a significant built environment and energy efficiency needs to be addressed. Redway is not worried about new buildings because the state mandates will ensure energy efficiency and, she believes, architects are getting smarter about green design. The larger question, of course, is reconciling the goal of reducing your carbon footprint while you are adding infrastructure.

#### *Government Grants and Incentives*

California’s Executive Order S-20-04, with a goal to reduce energy use in state buildings by 20 percent of 2003 levels by 2015, mandated that all new and renovated buildings must be rated to at least the Silver level of LEED™ standards.<sup>288</sup> While it requires the cooperation of the UC’s, CSU’s, and CCC’s, there are no built-in incentives or grants available to support the implementation of this mandate. What type of government grants and incentives, therefore, are available for public universities in California?

In reviewing the Database of State Incentives for Renewables and Efficiencies, I found a few grants and incentives available for K-12 schools as well as residences and businesses. For example, the State of California School Facility Program (SFP) offers incentives in the form of grants for K-12 schools to modernize facilities<sup>289</sup>. The California Solar Initiative offers incentives to residences and businesses.<sup>290</sup> I also found a loan fund under The California Energy Commission’s Energy Efficiency Financing Program that will provide up to \$26 million in loans to schools (including colleges), hospitals, and local governments “for energy audits and for the installation of energy-saving measures such as lighting control sensors and energy management systems.”<sup>291</sup> Again, Cal Poly is limited in its ability to take advantage of this type of loan fund.

Savings By Design<sup>292</sup> offers an incentive program for non-residential building design and construction. Sponsored by four of California’s largest utilities, Savings By Design offers building owners and their design team a wide range of services including design assistance and incentives to help offset the costs of making buildings more energy- efficient. Savings By Design also offers financial incentives to owners when the efficiency of the new building exceeds the minimum Savings By Design thresholds, generally 10 percent better than Title 24 standards.

Barbara Queen, project manager of the Center for Science and Mathematics building at Cal Poly, is working with Savings by Design and hopes to get a rebate. She has considered expensing this against the project or from a donor if they feel confident about receiving an equal amount from the utilities.<sup>293</sup>

On the federal level, there are great expectations with the new administration. In fact, the American Recovery and Reinvestment Act of 2009 includes a \$53.6 billion State Fiscal Stabilization Fund that will provide funds to governors for use in restoring and providing state funding to school districts. Roughly \$9 billion of this fund will be available for use by governors to address public safety and other government services, which may include school modernization, renovation, and repair consistent with a recognized green building rating system.<sup>294</sup> This includes public institutions of higher education.<sup>295</sup> Another \$3.1 billion will be coming to the states through the U.S. Department of Energy State Energy Program for clean energy programs and projects. Funding is targeted to state facilities that are 'shovel-ready' for retrofit. It will also support programs that incorporate sustainable strategies, including performance contracting and revolving loan programs that will provide ongoing dividends after the initial stimulus investment.<sup>296</sup>

If the Governor's office intends to make these funds available to campuses within the CSU, who will be representing Cal Poly's interests? According to Elvyra San Juan, Assistant Vice Chancellor Capital Planning, Design & Construction for the CSU, the CSU has hired a part-time grant writer who offers grant writing training on sustainability grants. This, according to San Juan, includes any aspect of sustainability.<sup>297</sup> Is anyone at Cal Poly positioned to access stimulus dollars for the campus? Are Cal Poly's advancement, academic deans, researchers, students and facilities staff working together to develop a strategy? As part of the Cal Poly advancement team, I am only familiar with one effort to acquire stimulus dollars, a National Health Institute grant submission for the Center of Science and Mathematics. There may be more activities, but advancement efforts between colleges or with Facilities Planning and Facilities Services are not always coordinated on campus. We are quite possibly embarking on an era of an increased state and federal investment in promoting sustainable building practices. Without a clear strategy, leader, and coordinated effort, we may be leaving money on the table.

#### *Private Fundraising*

So, too, does Cal Poly need an assigned person to explore funding opportunities in the private sector. Jerry Yudelson says "Over the next few years, there is no doubt that many private colleges and universities will find that their green buildings will draw donors from unexpected sources."<sup>298</sup> Private foundations such as the Kresge Foundation have already been supporting green building initiatives (although Kresge has ended their green building program). As we will

see in Chapter Seven, there are also individual donors who value sustainability. The gifts will come in many forms – from donated products and services to cash.

The Bren School of Environmental Science and Management at UCSB made up for their 2 percent shortfall by soliciting gifts in kind, or donated products. According to Perrin Pellegrin, the products were valued at approximately \$500,000 and included items such as carpeting, landscaping and waterless urinals.<sup>299</sup> According to Jennifer Purcell Deacon, UCSB brought vendors together to educate them on the value of green building– at a time when sustainability and LEED™ were not in the headlines. With a Kermit the Frog puppet on hand, they delivered the message that “green is easier than you think.” According to Deacon, “it was an easy sell.”<sup>300</sup> Most recently, Mitsubishi has agreed to donate cement created by using recycled tires and sludge instead of coal for fuel in the manufacturing process.

Jerry Yudelson notes that companies can benefit from joint marketing opportunities with product and equipment vendors around green projects. “Nothing,” says Yudelson, “beats publicity like having your project, with its green roof, PV system and LEED™ Gold plaque highlighted as a lead story on the six o’clock news or ten o’clock network news station in your city.”<sup>301</sup> Acknowledging the growth in LEED™ related projects, contractors seeking experience in LEED™ have also donated services. Cal State Fullerton’s Student Recreation Center achieved LEED™ Gold, and did not have to pay for LEED™ certification. According to Facilities Director Michael Smith, so far their contractors have donated the costs of LEED™ documentation.<sup>302</sup> Melody Maffei, Director of Design, Construction and Maintenance at California State University, Stanislaus said that, back in 2002, their architects asked for about \$300,000 to design for LEED™ Certification. The contractor, on the other hand, only added \$25,000 to their bid for the LEED™ requirements.<sup>303</sup>

Joel Neel, Associate Director of Facilities Planning & Capital Projects at Cal Poly, cautions that donated products can be a problem. The products have to be on hand when construction is ready. The preference, therefore, is funding.<sup>304</sup> The more challenging issue for Cal Poly, however, is the fact that processing gifts in kind fall outside the standard protocol for building.

I had the unfortunate opportunity to experience this first hand as the Director of Advancement for the College of Liberal Arts. After securing a gift from two donors to support an \$180,000 project to renovate the child development lab’s playground into a STEM-focused, sustainable outdoor learning lab, I learned of the complexity of even the smallest of capital projects. It took a year and a half from the time the primary donor said that she wanted to donate funding to this effort to groundbreaking to work through the university’s processes. In addition, the donor, an individual with significant experience in establishing child development facilities, wanted to donate the



playground equipment from a company that used only sustainable materials. This vendor was not one of the approved vendors by the state. She also knew that she would be able to cut the cost of installation by two-thirds if she hired the installer directly. Therefore, the gift of the playground equipment and installation became a gift in kind. As such, the project no longer fell under the initial renovation project and would not be supervised by the facilities staff overseeing the renovation. While certainly not my forte, nor the best use of my time as fundraiser, it became my responsibility to familiarize myself with building permits, equipment specifications, license requirements and the multiple steps outlined by the contracts and procurement office. There was no clear assignment of roles and responsibilities for a gift that fell outside the normal protocol.

Stories like this abound at Cal Poly. Indeed, Paul Bonderson, the donor for the Bonderson Projects Center, has stated on several occasions, “it is hard to give money to Cal Poly.” Instead of focusing on the end goal or supporting the delicate relationships cultivated over time with donors, there appears to be a resistance that borders on obstructionism to facilitating projects with non standard approaches.

As the university prepares to initiate the next capital campaign, one that will surely involve sustainability goals, and one that will surely require more private funding given the State of California’s budget, it needs to be prepared to manage the type of complex and significant gifts that will come from sophisticated donors. This means clearly assigned roles, an educated and fully staffed advancement team, a collaborative working relationship between facilities, advancement, and corporation staff, and a readiness to accommodate alternative approaches.

Jim Shea, Director of Development for Constituent Relations, UC San Diego, presented his ideas for involving advancement in meeting sustainable infrastructure goals at the 2008 UC/CSU/CCC Sustainability Conference at Cal Poly, San Luis Obispo.<sup>305</sup> Shea presents an argument to link sustainable building to advancement and speaks of a need to educate development professionals on the value of sustainability and the importance of raising funds for infrastructure. This argument may not be as valid at Cal Poly, where advancement is already heavily involved in fundraising for infrastructure projects, and where many advancement professionals have been advocating on behalf of sustainable causes. More relevant is Shea’s call for educating planners on how development works; that it is a long, creative, thoughtful process; that it takes years to secure a million dollar gift; and that it is important to bring donors in early on – not just when the building opens. Shea believes, “that it takes a major meeting of the minds at the highest level of the campus” and notes that there has been some discussion at UCSD around a high-level charrette to build an understanding of how advancement and facility planning works, along with

their respective constraints. This occurred several years ago at Cal Poly and should probably occur again.

Advancement staff members need to understand green goals as much as they need to understand the process behind the capital outlay and facilities planning programs. Development professionals can be a part of the creative team, but they need to be involved early in the process and consistently throughout. It takes years to identify and build relationships with potential donors; understanding the need first is essential to identify and then capitalize on opportunities. As fully integrated players, advancement staff can communicate more effectively with donors.

Collaboration with advancement is also critical in avoiding duplication. Currently, at least three entities at Cal Poly, The College of Science and Mathematics, the College of Agriculture, Food and Environmental Science and Facilities Services, have developed a relationship with Chevron. Shouldn't we be coordinating around a university-wide goal of sustainability? Not only would we be acknowledging Chevron's critical role in this process, we would be strengthening our partnership for future sustainability projects. We might even simplify the process of giving for Chevron.

Many argue that by integrating green goals and expertise from the initial planning phase so, too, do you engender innovation. According to the American Institute of Architects, "With the evolution of design comes the evolution of new collaborations, technology, and best practices. Increasing value through shared information fosters amazing accomplishments...and increased sharing requires effective collaboration."<sup>306</sup> A university-wide, collaborative, multi-disciplinary approach to bringing high performance buildings to fruition brings to the table multiple perspectives, a diverse knowledge base, and a forum for creativity – all with a shared commitment to sustainability.

#### *Contractual Alternatives of Sustainable Design*

What if you could just take those additional costs associated with high performance building – primarily the high cost technologies such as photovoltaics - out of the equation? Northern Arizona University's budget for capital projects does not include additional costs for photovoltaics. Solar panels are provided by an independent LLC created by the university, which buys the technology as part of a power purchase agreement (PPA).<sup>307</sup>

A power purchase agreement is an agreement in which an energy provider, usually a utilities company, pays the upfront capital costs of solar or wind power projects in exchange for a contract that requires the customer to buy the resulting electricity at a fixed rate. Says Rachel Barron of Greentech Media, "Almost everyone wants to go solar; they just can't afford it"<sup>308</sup> That is where

power purchase agreements come into play. Greentech Media analysts claim that the strategy is working, in fact “such power-purchase agreements will account for three-quarters of U.S. commercial and industrial solar sales this year and next.”<sup>309</sup>

Government incentives are a key component to the success of power purchase agreements. By creating tax incentives for businesses to buy green energy, they create demand that utilities can help meet through power purchase agreements. Businesses and utilities customers can buy Green Tags, or renewable energy certificates, from utilities companies. Green tags basically represent “the environmental attributes of the power produced from renewable energy projects and are sold separate from commodity electricity.”<sup>310</sup> The Green Tag market is expected to grow from about \$250 million to nearly \$1 billion dollars per year by 2010.<sup>311</sup>

In California, AB 1103, which was passed in October 2007, requires non-residential consumers to report annual energy-use as of January 2009. Beginning in 2010, owners of commercial buildings will also have to disclose their energy usage and Energy Star rating to potential buyers, leasers, and financiers.<sup>312</sup> Cap and Trade has become a major topic of conversation at the federal level. These types of policies will incentivize businesses to buy green energy and energy companies to produce green energy.

The State of California and the CSU entered into a power partnership agreement with Sun Edison, “to bring solar power to the university system.”<sup>313</sup> Under the agreement, Sun Edison will finance, build, operate and maintain the solar panels on 15 CSU campuses for twenty years. In return, the CSU agrees to buy renewable power at or below current retail rates.

According to Elvyra San Juan, the CSU/Sun Edison power partnership agreement is now in the second phase. Cal Poly Engineering West was a part of Phase I. Campuses are selected through an open bid process. Phase 3 will be open to campuses that did not make phase 2.<sup>314</sup> Mark Hunter acknowledged that Cal Poly is moving toward third party providers, but we haven’t been aggressive. He believes that, if we make it an active part of the original design, it would be much cheaper.<sup>315</sup>

At Cal Poly, Dennis Elliot has been facilitating the Chevron Energy Audit, which was half completed by fall 2008.<sup>316</sup> Funded by the state at approximately \$380,000, this is an investment grade audit on the entire campus. Elliot stated that \$5.5M recently was recently approved by the university to implement the priority recommendations. They anticipate recovering capital expenditures in 13 years. In addition, there has been discussion around building a 1 megawatt solar PV, a 3 megawatt wind farm, and an approximately 1 megawatt biomass energy plant

(utilizing agricultural, food, and dairy waste). Energy would be delivered under a power purchase agreement. Cal Poly would not provide the money upfront, rather, they would like for investors to finance the projects. A company like Chevron, says Elliot, could go out to investors with a pitch of providing clean energy that companies can purchase for a tax credit. Those companies can then sell Green Tags which helps businesses reach AB 32 goals to reduce greenhouse gas emissions.

## **Conclusion**

The strategies for funding mirror the recommendations for reducing cost: A clearly defined value and strategy, leadership, collaboration, streamlined processes, and room to innovate. Any fundraising effort – whether we pursue a green loan fund or initiate an aggressive grant writing campaign - needs a clearly defined goal and commitment of resources. This requires leadership and the prioritization of values. By working collaboratively around sustainability goals, rather than independently on a project basis, we increase opportunities to find innovative solutions such as tying power partnership agreements to new construction goals.

Instead of focusing on the stranglehold caused by the separation of capital planning and operating budgets, we could be working together with the CSU to circumvent that barrier – perhaps by lobbying the state to pursue a green bond issue or to consider a revolving loan from the general fund. As a university, we need to be proactive in capitalizing on the funding opportunities that will inevitably grow out of the awareness of sustainability and LEED™ and that are already available through the American Recovery and Reinvestment Act of 2009. Finally, if we are to pursue government or private capital to support a goal of high performance buildings, we need make it easier to give through clearly assigned roles and an adaptable mindset.

As the trend for new construction at Cal Poly continues to involve some level of private funding, we need to find a way to finance these projects. The green building movement continues to gain support and the federal government is offering stimulus dollars to finance energy efficient construction and renovation. Without a clearly defined sustainability goal and plan, we do not have clearly defined objectives and roles. By resisting a more holistic, university-wide approach, we may be diluting our ability to successfully compete for sustainability-focused funding.

In Chapter Two I outlined the benefits of sustainable building, including the potential marketing advantage of being a recognized leader in sustainability. To date, Cal Poly has not taken a comprehensive approach in communicating its successes in greening the campus – either internally or externally. In addition, there has been a lack of appreciation of the marketability of sustainability and the potential cachet of a LEED™ certified building. Ironically, at the time of this writing, Cal Poly released its first LEED™ story, a LEED™ Silver certification for an existing

building, the College of Science and Mathematics Faculty Offices. The story was picked up by the local press. Poly Canyon Village, supported by non-state funds, has also publicized its pursuit of LEED™ certification (although not on its website). In general, however, when weighing the costs of a state funded or hybrid funded new building, LEED™ certification is abandoned.

If we choose to market our buildings to donors and industry partners as sustainable, do we need a third party verifier? What are the costs and benefits of using LEED™, especially when alternatives that are deemed more appropriate for college campuses are emerging? Is LEED™, as the “gold standard” for benchmarking green, marketable to donors? If so, could LEED™ certification be viewed as a fundraising tool – another opportunity to transform the funding paradigm? These questions will be explored in Chapter Seven.

## Chapter Seven

### Going for the Gold? LEED™ as a Fundraising Tool

The green building movement has gained broader attention in the last five years, thanks, in part, to the United States Green Building Council and the emergence of LEED™ as a guide and benchmark for the design and construction of high performance buildings in both the public and private sectors. My preliminary research, as outlined in this chapter, points to an emerging consensus that, despite its critics, LEED™ - at this moment in time - is important when marketing green buildings. In fact, many believe that when marketing to potential donors, third party verification is critical and, as the most widely recognized certification program, LEED™ carries with it a certain cachet. In a climate of scant resources, can Cal Poly afford to build LEED™ Gold or Platinum buildings? Can it afford not to?

In chapter three, I introduced the concept that sustainability is marketable to students, faculty, and the community. This chapter will specifically explore the marketability of green buildings, whether that translates to potential donations, and whether it has to be LEED™ certified to attract dollars. Can LEED™ be used as a fundraising tool?

#### The Marketability of Green Buildings

U.S. Green Building Council (USBGC) founder David Gottfried observed in 2006 that “Green has already begun to make a business impact, “and we’re just [getting started].”<sup>317</sup> In 2004, according to the USBGC, green building products and services represented \$7 billion of the U.S. market - a 37 percent growth over the prior year. By 2008 that figure had reached almost \$57 billion in the U.S. and is now projected to expand 7.2 percent annually to over \$80 billion by 2013.<sup>318</sup>

This consistent growth in market share indicates a trend in sustainable building that is expected to continue into the foreseeable future. In *The Green Building Revolution*, Jerry Yudelson references a survey conducted by advertising agency JWT Worldwide in 2006 that ranks sustainable construction and green buildings at number 7 out of 70 trends to watch in 2007. “The trend,” says Yudelson, “is unmistakable.”<sup>319</sup>

What does this mean for higher education? In a 2007 projection of annual growth rates for green buildings, McGraw-Hill Construction Research & Analytics, a provider of construction market

analysis, forecasts and trends, placed the education sector at the top of the list for green buildings, with a projected 65 percent annual growth rate. The government sector was close behind at 62 percent.<sup>320</sup> According to Jerry Yudelson, educational construction is the largest single market sector in the building industry, and about 36 percent of that is higher education (and, of that, about 19 percent is public universities and colleges). Says Yudelson, "The green building revolution is about to flood the education market like a tidal wave."<sup>321</sup>

Many universities and colleges are on the front end of the green building revolution and have become quite successful at marketing their greenness. The University of Vermont, Oberlin College, Humboldt State University, and Chico State, among others identify themselves as green campuses; in fact, it is a dominant marketing message. Says Scott McNall of Chico State, "Green is a value added for students, the community, and donors. Anytime anyone can learn from a building it adds value. The Chico brand says that we are stewards of the environment, we are creating a learning opportunity for the students, and we are informing members of the community what we can do."<sup>322</sup>

What is driving this trend? Judy Walton, Director of Strategic Initiatives for AASHE, asserts that the trend in green building in higher education is being driven by four primary factors: concern about rising energy costs, the desire to do the right thing, student and faculty pressure, and the marketing benefits that come from showcasing green buildings in student recruitment.<sup>323</sup>

Yudelson contends that state level mandates are also a factor.<sup>324</sup> Indeed such mandates have driven the University of California and California State University systems to design to the equivalent of LEED™ Silver for new construction. Of course, as noted in previous chapters, they have reached varying degrees of success.

Does green building offer a competitive edge? As more and more universities and colleges embrace sustainable building practices, will those who don't be left behind? Notes AASHE board member, Matthew St. Clair, "Green building in higher education may now have hit a critical mass given the reputation-driven nature of higher education. Enough universities have instituted green building practices that all others have to follow or suffer a potential competitive image disadvantage."<sup>325</sup> In 2001, some UW-Madison alumni stopped giving money to the business school because its ratings dropped in national rankings.<sup>326</sup> Would the same hold true for poor sustainability rankings? For campuses seeking a competitive advantage will it need to be LEED™ certified? If so, will LEED™ Silver be enough or will reputations be built on LEED™ Gold or Platinum?

## Understanding Alternative Methods of Benchmarking Green

Before qualifying the marketability of LEED™, we must first understand valid comparisons. In fact, there are several other green building guidelines designed to drive sustainable building. New York State established the New York High Performance Building Guidelines, Minnesota created the Minnesota Sustainable Design Guide. In California, the state established The California Climate Action Registry to offer guidance on the reduction of greenhouse gases (GHG). The Registry provides tools for consistent measurement and reporting of GHG emissions among organizations who voluntarily conduct self-assessments. Projects are verified by an independent third party to quantify the GHG reductions and to ensure the project has met the protocol standards.<sup>327</sup>

The Green Building Initiative (GBI), a non profit organization whose mission is to accelerate the adoption of sustainable building practices, developed Green Globes to provide green building guidance and assessment.<sup>328</sup> The program, which GBI describes as practical and affordable, offers a standard protocol and web-based self-assessment tool, along with qualified assessors with green building expertise who interface with project teams and conduct an on-site assessment. Green Globes offers a rating and certification system, which assigns a value of one to four globes based on environmental achievements.

Apart from cost, one of the criticisms of LEED™ on college campuses is that it is just not designed for the university system.<sup>8</sup> In 2006, AASHE led an effort to respond to the call for a campus sustainability rating system. The organization sought input from participants of multiple sustainability workshops and conferences, as well as campus sustainability leaders over the course of a year and a half. AASHE then established a Strategic Advisory Committee and a Technical Advisory Committee comprised of over 30 and 90 campus representatives, respectively.<sup>329</sup>

In September 2007, AASHE released the STARS 0.4 pilot. STARS offers guidance on sustainable construction, tools for the measurement of an institution's performance over time, and a common standard for measurement of sustainability in higher education. STARS also enables institutions to track their progress over time and identify areas for improvement. Using LEED™ as

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<sup>8</sup> Actually, in 2006 the USGBC developed the Portfolio Pilot Program to enable more building owners – including higher education - to integrate LEED™ certification into new and existing buildings in their company's portfolios, and to do so in a cost effective way that does not sacrifice the technical rigor or integrity of LEED™ (Portfolio Program Pilot, <http://www.usgbc.org/ShowFile.aspx?DocumentID=3387>)..



a model, the STARS checklist includes campus design specifications according to LEED™ Silver (or equivalent) requirements. This means that LEED™ requirements are embedded in the campus building standards.<sup>330</sup> AASHE emphasizes that its inclusiveness, transparent rating system, simplified process, and information sharing, make it possible for all college campuses to have an equal opportunity to participate in STARS. STARS also focuses on the broader definition of sustainability and includes credits that also relate to an institution's social and economic equity, commonly referred to as the Three Es of sustainability: economy, ecology, and equity.

In absence of a third party to verify performance, STARS has instituted a strategy of self reporting, whereby the primary campus representative submits a statement that the credit information submitted is accurate to the best of his or her knowledge. This is accompanied by a letter of verification by the institution's president or chancellor. AASHE also believes that making all information publicly available will promote accountability. The organization is still considering a peer review process and has not determined whether STARS will require a fee. Over 90 institutions are using and providing feedback on the pilot version of STARS throughout 2008, including Chico State University and Sacramento State University.

It will be interesting to see how STARS will be received on college campuses. On the one hand, as Jill Richardson of UC Santa Barbara notes, it will look strange if universities and colleges don't adopt STARS when the final version is rolled out. On the other hand, it is unclear how STARS will affect campus image. According to Richardson, the main people attracted to LEED™ are those in the green building industry, whereas STARS might be more useful in recruiting students.<sup>331</sup> What is interesting is that AASHE, in its reasoning for STARS, explains that the cost and encumbrance of LEED™ has made it difficult for many institutions to reap the marketing, recruitment, and fundraising benefits of sustainability leadership. Whether STARS will accomplish this goal, especially without third party verification, remains to be seen.

The California State University is developing its own protocol to guide sustainable building for its 23 campuses. The CSU Program for Environmental Responsibility (CSU-PER), which was scheduled to roll out in fall 2008 (but has stalled), provides specific guidelines to integrate sustainable building practices into capital projects (See Appendix III). The CSU-PER program adopted some of the more commonly accepted practices of LEED™ such as sustainability workshops, integrated design, and consideration of lifecycle costs. It offers a third party verification solution for the monitoring of sustainability decisions throughout the planning, design, construction and operation of capital projects.<sup>332</sup> This includes an option to hire a consultant or to work with the Sustainability Review Board or the CSU Sustainability Coordinator.<sup>333</sup>

As the Center for Science and Mathematics was under design prior to CSU-PER, the university has not had an opportunity to adopt the new program. Barbara Queen confirms that the CSU-PER components are in-line with typical CSU requirements such as life-cycle costing, 50-yr buildings, and water quality.<sup>334</sup> As CSU-PER is based on LEED™ principles, it is assumed that the protocol will eventually supersede the Chancellor's order to build at LEED™ Silver equivalent. It would also be interesting to track the expenses associated with the development and roll out of CSU-PER and determine whether those funds could have been use to pay for the LEED™ certification on CSU projects during that timeframe or if resources could have been better spent working within LEED™ to advocate for higher education specific ratings.

Both STARS and CSU-PER, designed specifically for institutions of higher education, are in still in the pilot phase so there is no basis of comparison to determine project results against LEED™. Green Globes, which has been around longer, is lower in cost, and is simpler to use than LEED™ however it “lacks,” according to Jerry Yudelson, “the rigor and therefore credibility of an independent third-party verification system.”<sup>335</sup> Bryan and Skopek, however, compared results from seven individual buildings using Green Globes and LEED™ and found a “high level of equivalency between the two.”<sup>336</sup> The researchers note that while LEED™ is more established in North America, there is a need to rapidly increase the number of green buildings and that “one size does not fit all.”<sup>337</sup> In addition, they assert, competing systems may propel green building forward.<sup>338</sup> Yudelson, on the other hand, notes that “Green Globes...currently has less than 2 percent of the market for commercial and institutional buildings.”<sup>339</sup> Due to their geographical scope (past and current projects are primarily in Canada), the name is less well known in the United States. In addition, I suspect that a quick review of their budgets (with USGBC at \$50M+) would confirm that Green Globes does not have the same impact of LEED™ in terms of resources, staffing and, ultimately, influence.

Several of the models, including the STARS pilot lacks verification from an outside party, which many believe lends credibility to green building projects. In fact, the values of third party verification and a national standard were among the primary impetus behind the development of LEED™. It is too soon to tell if STARS, with its roots in LEED™, will still be adopted on as large a scale as LEED™. While CSU-PER, like LEED™, will most likely support the development of high performance buildings, the costs – especially around third party verification – are not clear. It is likely, however, that CSU-PER, if adopted by the CSU will not be optional. It will be interesting to observe whether some institutes of higher education will still pursue LEED™ certification in conjunction with STARS or CSU-PER for the perceived public relations benefit. As observed in chapter five, LEED™ has quickly become the national standard and the most recognized brand

when it comes to green building. According to Yudelson, “LEED™ has market domination and will likely keep it in the years ahead.”<sup>340</sup>

### **The Case For LEED™**

In comparison to the alternative methods of benchmarking, LEED™ offers an accepted model, third party verification, and prominence in the market place – important factors when considering marketability.

#### *An Accepted Model*

Many proponents of green building attribute the U.S. growth in sustainable building practices to LEED™. In his book, Marketing Green Building Services, Jerry Yudelson asserts, “...since the introduction of LEED™ in the spring 2000, it has become for all practical purposes the “defacto” US national standard... By anyone’s reckoning, LEED™ is the fastest growing voluntary program to affect the design and construction industry in many years.”<sup>341</sup> “Without question,” says Jeff Hampton, a spokesman for Fort Worth, Texas-based Carter & Burgess, “the LEED™ program is literally constructing the infrastructure that will allow the green movement to bloom. The USGBC and other sponsored research are helping put solid numbers behind the assumed costs and benefits,”<sup>342</sup>

LEED™ is a commonly accepted standard and a consistent benchmark for what makes a building green. “Before LEED™ [green building] was more hit or miss,” says project manager Dennis Wilde, “Without such a metric, it would be easy to ‘greenwash.’”<sup>343</sup> Each of the studies cited in Chapter Five used LEED™ as a barometer for green. The GSA, in fact, compared LEED™ with other rating systems and found that while “each of the rating systems has merits, LEED™ continues to be the most appropriate and credible sustainable building rating system available for evaluation of GSA Projects.”<sup>344</sup>

Users say the system also has other benefits. Not just because it has been around longer than others, but because of what it emphasizes. Some sources say the resulting product is superior. “It is a systematic approach to better buildings—not just ‘green’ buildings,” says Pamela Lippe, principal of E4 Inc., a New York City-based high-performance building consultant. “LEED™, she continues, “addresses problems like sick building syndrome and mold.”<sup>345</sup> Yudelson notes that LEED™ focuses on a broader range of issues than most other green building or energy-efficiency guidelines.<sup>346</sup> “LEED™ provides a rigorous road map to building green,” says Yudelson.<sup>347</sup> Perrin Pellegrin states that LEED™ also offers additional examination of energy modeling and water

usage; things we need to be doing anyway – especially in California.<sup>348</sup> In the last few years, several states and cities have delivered mandates to build to LEED™ protocol.

The USGBC cites the benefits of LEED™ as a blending of environmental, economic, and occupant-oriented performance. LEED™ buildings cost less to operate and maintain; are energy- and water-efficient; have higher lease up rates than conventional buildings in their markets; are healthier and safer for occupants; and are a physical demonstration of the values of the organizations that own and occupy them.<sup>349</sup>

It wasn't until recently that studies have been initiated to evaluate whether actual building performance is comparable to predicted performance for LEED™ buildings. A 2008 USGBC report on post-occupancy energy performance of LEED™ buildings found that LEED™ buildings are, on average, delivering anticipated savings. Comparing energy usage against several benchmarks, the data shows energy use for LEED™ buildings as 25-30 percent better than the national average. The report also indicated an average savings increase for the higher LEED™ levels, "with Gold/Platinum buildings approaching the interim goal [reducing GHG emissions 50 percent by 2010] of Architecture 2030."<sup>350</sup> The GSA also conducted a post-occupancy evaluation of 12 GSA buildings, seven of which are LEED™ certified. They found that, overall operational costs, energy performance, and waste costs are better than those of a conventional building.<sup>351</sup> While neither study specifically compared building performance of LEED™ certified to other green buildings, it is important to acknowledge that actual LEED™ building performance mirrored projected performance. On August 25, 2009, the USGBC announced the launch of the Building Performance Initiative, an effort to help close the performance prediction gaps. According to the USGBC, the Initiative is designed "to put in place a comprehensive data collection effort from all buildings that have achieved LEED certification; implement an appropriate analysis methodology of that data; and provide feedback to building owners so they have better information with which to address any performance gaps that stem from predicted building performance versus actual performance."<sup>352</sup>

#### *Verifiable Third-Party Review*

LEED™ also offers a credible third-party verification of a building's performance. Before LEED™, there was no standard; no common measurement or process to justify claims of greenness or to verify building performance. "Prior to LEED™," say Schlender and Udall, 'green building' was all in the eye of the claimant."<sup>353</sup> Explained another way, "LEED™ is like the nutrition label on the side of a box of crackers."<sup>354</sup>

While there are alternative means of benchmarking sustainable measures, even critics contend that LEED™ has become the green building standard. Says Smalley Bowen, “Interested parties from across the spectrum recognize that LEED™ is the dominant green-building standard, so it can't be ignored.”<sup>355</sup> Even if they do not understand the process of LEED™, people know what LEED™ represents: a green, efficient building.

Cal Poly is currently building to LEED™ protocol, but still questions the value of LEED™ certification on state funded and state-private funded projects. There is a lot of budgetary pressure on capital projects – LEED™ certification is seen as another line item. As long as we are “walking the talk” isn't that what matters? “There's so much budgetary pressure on these projects,” notes Jonah Cohen, President of Thomas Hacker Architects, “that it's one more line item where they can reduce costs. It's a slippery slope because you sort of get back to where we were before LEED™ in that you just have to trust us [to do the right thing].”<sup>356</sup>

Susan Pelczynski addresses this dilemma for non-profit organizations:

When a nonprofit fortunate enough to initiate and complete a new building project considers whether to pursue LEED™ certification, it may decide to avoid the paperwork and follow-up commissioning associated with LEED™, while still promoting its building as environmentally sustainable. In such a case, while the completed building is likely to be a blessing for the organization, the building's tenants, and the environment as a whole, the final design of the building almost certainly will not push the sustainable design envelope or achieve its full property value.

Why is this important? Let's say you have a friend or family member who has studied at an elite university, made great grades, and is about to graduate; in other words, she'll be very marketable on the job market in a few months' time. But at the last minute she decides not to take the final exams necessary to complete her courses and graduate. Most people would recognize that as a huge mistake — not just in terms of her immediate job prospects, but in terms of life. It's the same for organizations and building designers that don't go the extra mile to obtain LEED™ certification. They've done all the hard work but they fail to fully capitalize on their investment. Yes, you can avoid the paperwork if you chose to, but you'll be sorry you did.<sup>357</sup>

While LEED™ is not the only way to benchmark the greening of a building, it has quickly become the national standard. For CSU campuses – who are mandated to build at LEED™ Silver equivalent anyway – it seems to some a missed opportunity not to go the final step to document the important work that has been done. In addition, a LEED™ rating serves as an opportunity to further educate the campus community on the elements that make the building sustainable and why it is important.

### *LEED™ May Be Required for Funding*

There is speculation that, as government grants become available for green capital projects, LEED™ may be required. A recent announcement from the USGBC highlights funding for green schools included in the American Recovery and Reinvestment Act of 2009. Approximately \$9 billion of the \$53.6 billion State Fiscal Stabilization Fund to be administered by the Department of Education, “will be available for use by governors to address public safety and other government services, which may include school modernization, renovation, and repair consistent with a recognized green building rating system.”<sup>358</sup>

This is not unusual. In 2004, as part of the American Jobs Creation Act, Congress authorized up to \$2 billion of tax-exempt “green bonds” to be issued by state or local governments for green building projects that meet certain qualifications. Among the criteria was compliance with LEED™ certification requirements.<sup>359</sup> The Kresge Foundation’s Green Building Initiative, retired in May 2009, also required LEED™ registration for grant recipients<sup>360</sup>. Beginning in June 2010, The Kresge Foundation will offer challenge grants for new construction, renovations, and expansions in the higher-education sector. The Foundation, however, will only consider proposals for facilities-that plan to meet LEED™ Silver or an equivalent rating agency.<sup>361</sup>

### *Competitive Edge*

According to the USGBC, as of May 1, 2008, 3.5+ billion square feet of building projects have registered for LEED™ certification.<sup>362</sup> This includes initiatives in 44 states (including 122 cities, 34 counties, and 30 towns), 31 state governments, 12 federal agencies or departments, 15 public school jurisdictions and 39 institutions of higher education across the United States.<sup>363</sup> In fact, LEED™ certifications in the education sector are on the rise - at 26 percent the fastest growing sector.<sup>364</sup> The higher education market, at 7 percent of LEED™ project registrations, “appears to be poised to increase in scope and importance in the next few years, as more campuses adopt sustainability as a paradigm for all their operations including curricula, purchasing, facility operations, student housing, and new construction of all types.”<sup>365</sup>

UCSB’s Bren School attracted significant attention when it achieved LEED™ NC Platinum (v.1). Says Jennifer Deacon, “The awareness of green grew after the building. Now people are impressed. It perks them up. This has created a bit of a halo effect around the school, and has provided for the schools’ meteoric rise in distinction, which is on par with similar schools that have been around for 100 years.”<sup>366</sup> Northern Arizona University benefitted from a similar experience when the new College of Business and College of Engineering buildings were rated at LEED™ Gold. According to Richard Bowen, the business building has also changed the way the school thinks about themselves; applications doubled and the student investment group won its first

national award. After the College of Engineering's new LEED™ Gold building was constructed, enrollment increased dramatically. Without any changes to the curriculum, the College is now listed as one of the "Top 25" in US News and World Report.<sup>367</sup>

In a recent interview David Gottfried, founder of USGBC and LEED™ creator, stated that all buildings can aim to be ecologically friendly, and that owners can use any rating system that fits as long as they are doing something now. Gottfried, however, also asserted that "buildings which do not apply themselves to the LEED™ rating system will be devalued in the future, adding that those not certified will be classified as "B" buildings, not "A" buildings and they could be a liability."<sup>368</sup> According to the The College Sustainability 2009 Report Card, 42 percent of schools have completed or are constructing at least one LEED™-certified green building and 57 percent have adopted minimum building performance goals such as achieving LEED™ Silver certification.<sup>369</sup>

Do universities stand to lose their competitive edge if they do not adopt LEED™? Or, in thinking about it another way, could LEED™ offer a competitive advantage for a university wishing to distinguish itself as a leader in sustainability? Harvard University has adopted LEED™ certification and rival Yale University, which builds at LEED™ Silver equivalent, is currently weighing the value of LEED™ certification. Will this be a factor in future capital campaign performance?

### **The Case Against LEED™**

LEED™ is not a perfect system; and it is not for everyone. Its critics contend that it is cumbersome, costly, and not easily adaptable to certain projects (like on college campuses). Many argue that the point system that drives levels of certification does not always result in a greener building. Indeed, Cal Poly's Bonderson Project Center, which earned two sustainability awards, would have barely earned a LEED™ Certified rating.

Schlender and Udall opine on the end result of LEED™:

The result: mediocre 'green' buildings where certification, not environmental responsibility, is the primary goal; a few super-high-level eco-structures built by ultra-motivated (and wealthy) owners that stand like the Taj Mahal as beacons of impossibility; an explosion of LEED™-accredited architects and engineers chasing lots of money but designing few buildings; and a discouraged cadre of professionals who want to build green, but can't afford to certify their buildings. (Indeed some buildings, although they achieve LEED™ certification, are hardly green.) Instead, the buildings are a compilation of green technologies stacked on a standard building, like putting lipstick on a pig, but more expensive.<sup>370</sup>

### *The Cost of LEED™ certification*

One of the most common barriers cited for the official adoption of LEED™ is the cost of certification. “Everyone is enthused about sustainability,” observes Patrick Jacobs of CSU Bakersfield, “but there is no desire to spend money on LEED™. Our faculty, students, and administration are satisfied with self-analysis. We would rather spend \$50,000 more on energy conservation.”<sup>371</sup> Colin J Donahue, Associate Vice President of Facilities Development and Operations at CSU Northridge, shared that it required about \$150,000 in additional costs to obtain the LEED™ silver certification on a recent building but that the actual USGBC cost was a minor portion of this. The majority of the cost was for the additional verification work by their Architecture/ Engineering team and additional requirements the mechanical contractor needed to meet.<sup>372</sup>

It is difficult to separate out greening costs, which may be mandated anyway, to the actual costs attributed to LEED™ certification. As noted in chapter five, the ‘green premium’ is often due to program choices, not LEED™ requirements. Therefore, it is important to examine the soft costs of LEED™ certification. Soft costs are those attributed to LEED™ registration and certification, as well as the requirements that come with certification, such as documentation, energy modeling and commissioning costs for LEED™ accredited professionals.

While there have been a few studies on the soft costs of LEED™, the results vary. A 2003 study conducted by Northbridge Environmental Management Consultants estimated soft costs at 3-5 percent of overall budget, depending on project size.<sup>373</sup> The U.S. General Services Administration (GSA) 2004 study found that LEED™ soft costs represented less than 1 percent of overall costs (0.2 - 0.4 percent).<sup>374</sup> Jim Nicolow of Building Operating Management, found that, on average, additional soft costs attributed to LEED run around \$150,000.<sup>375</sup> Another study by Enermodal Engineering estimated a minimum of \$60,000 for projects under 20,000 square feet and about \$1 per square foot for projects over 100,000 square feet driven primarily, by commissioning costs.<sup>376</sup>

	<b>Best Estimate</b>	<b>Range</b>
Design Costs	0.5%	0.4% - 0.6%
Commissioning	1%	0.5% - 1.5%
Documentation & Fees	0.7%	0.5% - 0.9%
Energy Modeling	0.1%	0.1%
Total	2.3%	1.5% - 3.1%

**Table 7-1. LEED™ Soft Cost Estimates 2003,  
Northbridge Environmental Management Consultants<sup>377</sup>**



These studies indicate that soft costs, like hard costs, vary according to a variety of factors, including program design, the level of “green,” when LEED™ is introduced to the project, and the experience of the design team. What the studies also indicate, however, is that while there are many factors that influence cost, “they are quantifiable, they can be priced, and they can be managed.”<sup>378</sup>

Cornell University offers lessons learned from their experience with the Biofuels Research Lab to bring down the cost of LEED™. Their recommendations for increased efficiency and decreased cost echo the themes from the case studies in Chapter Five, such as: develop campus-wide standards, identify the LEED™ certification level early in the process, identify easily obtainable credits early, save on design time by providing a prepared package for standard LEED™ credits, integrated design with clearly understood LEED™ goal, and the integration of lifecycle costs when advocating LEED™.<sup>379</sup>

For UC and CSU campuses, the soft costs of LEED™ still pose a significant challenge to many campuses as the state will not pay for certification. Bettina Redway, Deputy Treasurer for the State of California, understands the LEED™ Silver equivalent mandate for the UC's and CSU's. When asked if the state had considered integrating the soft costs of LEED™ in its capital outlay, she commented that the state does not want to lock people into one regulatory system, nor does the state want to get into the argument that green costs more. If you decide to go with LEED™ certification, says Redway, the expense must be part of your capital outlay.<sup>380</sup> When the Governor vetoed AB 35 (Ruskin) and AB 888 (Lieu), propositions that would have granted authority to the United States Green Building Council to establish LEED™ as the building standard for state facilities, he reasoned, “Allowing private entities, such as proposed in this bill, to dictate California's building standards usurps the state's authority to develop and adopt those standards and could compromise the health and safety of Californians.”<sup>381</sup>

When making decisions on whether to fund LEED™ certification or an energy saving technology, some find it difficult to defend LEED™. Cal Poly's administration finds LEED™ certification hard to justify, especially when funding for capital projects is so tight. At the time of this writing, Cal Poly's Center for Science and Mathematics, scheduled to break ground in fall 2009, is still \$6.5 million shy of its private funding goal and waiting for state bonds to sell in order to finance the state portion of the project. While designed close to LEED™ Gold, they are not pursuing LEED™ certification at this time due to the \$325,000 price tag. The advancement team is not allowed to talk to donors about funding the certification process as it could derail the overall fundraising process.<sup>382</sup>

Others, however, believe that the benefits outweigh the cost and/or that the cost is minimal when compared to the overall project cost. The College of Science and Mathematics Dean, Phil Bailey, is a proponent of LEED™ certification and thinks it is “ridiculous” not to go for LEED™ certification, especially when a LEED™ Gold can be achieved. The \$325,000 cost represents less than 0.3 percent of the overall \$131,451,000 budget. Dr. Bailey believes that the project will attract donor funding on the back end because of the certification.<sup>383</sup> Says Perrin Pellegrin of UCSB, “LEED™ is the best practice to follow – how can you call that a cost?”<sup>384</sup> Bob Kitamura, Director of Facilities Planning and Capital Projects at Cal Poly, believes that money is not the problem; politics is the problem. He believes that LEED™ payments should be part of bond funding, that LEED™ certification needs to be a line item expense, and that flexibility of funding needs to happen.<sup>385</sup>

There is also evidence that as project teams gain experience with LEED™ costs decline. One Seattle-area contractor says that his first LEED™ building required approximately 400 hours to document. Now that he is working on his third registered project, documentation required “about 20 to 40 preconstruction hours, approximately five hours each week during construction and another 20 or 30 hours to prepare for final submittal.”<sup>386</sup>

The challenge in deciding whether to pursue LEED™ certification is exacerbated by the fact that it is difficult to quantify the potential payback. While the USGBC and adopters of LEED™ have done important work in quantifying building performance and energy savings of LEED™ buildings, they have done so only against non-LEED™ buildings. Therefore, we have no way of knowing if the comparisons were drawn from conventional buildings or other green building efforts. Pay back that may be attributed to more intangible things like reputation, educational value, and the potential to capitalize on the LEED™ brand in fundraising are difficult to quantify. Says Jerry Yudelson, “The relative economic advantage of green buildings and LEED™ has yet to be shown in either [the private or public sector] markets, given the demonstrable higher costs and certainly higher certification costs, compared with conventional practice... The expectation of real benefits has to exceed the likelihood of increase costs by 25 percent or more to change most decisions in favor of new technologies or methods.”<sup>387</sup>

Though currently small in number, it is important to note that grants may exist for projects seeking LEED™ certification. Environmentally aware donors should be targeted to support LEED™ soft costs, as they are more inclined to recognize the potential benefits. While it is difficult to predict these costs in the project, the potential should not be ignored when presenting the cost of LEED™

certification.<sup>388</sup> In addition, there is the potential of receiving a loan, perhaps from a donor, to cover LEED™ costs, based on the possibility of a future refund from a utility incentive program such as Savings by Design.

Finally, while I found only one source of anecdotal evidence of this, there is always the potential backlash that may come from the use of tax payer dollars for LEED™ certification. Cal Poly advancement professional Tanya Kiani tried to push LEED™ during the planning for the Construction Innovation Center as she thought it would be more marketable, but her efforts were unsuccessful. LEED™ certification was going to cost too much money and some feared a potential backlash if it was perceived that state funding was being used for certification.<sup>389</sup> Of course, that observation was made by individuals, primarily architects and builders, who were more intimately aware of the intricacies of LEED™ than the average observer.

#### *It's an Encumbrance*

Schendler and Udall best captured the argument that LEED™ is an encumbrance when they claimed, “LEED™ has become costly, slow, brutal, confusing, and unwieldy, a death march for applicants administered by a soviet-style bureaucracy that makes green building more difficult than it needs to be, yet has everyone genuflecting at the door to prove their credentials.”<sup>390</sup> They cite complicated energy modeling, a crippling bureaucracy, and an onerous and review process as part of the problem. Of course, state standards such as California’s Title 24 requires energy modeling.<sup>391</sup>

Donors to the Center for Construction Innovation were drawn primarily from the architecture and construction fields – industries more inclined to understand LEED™ processes. According to Kiani, they liked the idea of going green, but didn’t feel we needed the bureaucracy of LEED™ to get here.<sup>392</sup> Scott McNall of Chico State shared an oft quoted sentiment, “LEED™ is “ring through the nose for people who don’t want to make progress.”<sup>393</sup> LEED™ may not get us to the highest levels of building performance, but it is a useful tool for moving people forward on green building, especially administrators.

#### *Overblown Claims*

Critics argue that LEED’s™ “one size fits all” approach to credits reduces the impact of green building. LEED™ points are not weighted, they assert, therefore LEED™ Gold buildings may not be the greenest. Certification, rather than energy efficiency, becomes the goal. There is no regional differentiation. Energy performance measures that might make a significant difference in an arid region may not have the same impact in a humid region. Bob Kitamura raises the point that material life, or the durability of selected building materials, is also not a factor in certification.

A building can earn points from a carpet designed with recycled materials, but the carpet can wear in eight years. It makes no difference if the building is designed to last 100 years or 25.<sup>394</sup>

According to Schendler and Udall, The Bren School at UCSB, which was certified at LEED™ Platinum, was “cited by a well-known green design professional/author as an example of this flaw in the process.”<sup>395</sup> While the school purchased expensive green technologies to increase energy efficiency, the building was not designed for passive solar. Instead of being constructed with the longest façade along the East-West axis that is best for passive solar, Bren Hall’s longest façade faces west, which raises the cooling load. The statements of increased energy efficiency, therefore, are diminished by the actual results.<sup>396</sup>

LEED™ skeptics believe that some LEED™ buildings may not be performing as projected. Says Nadav Malin of BuildingGreen, “Some LEED™ projects are actually using more energy than their base case energy model, which represents minimum performance to code in many states.”<sup>397</sup> One article on InformedBuilding.com observed that, while there have been some studies on LEED™ buildings that point to post occupancy energy performance; they have not been conducted on a large enough scale to be statically significant.<sup>398</sup> One critic emphatically insisted that LEED™ buildings are not statistically different than typical buildings, “even though their mean is around 15 percent better (kind of like how a political candidate can be 3 points ahead but have it be a statistical dead heat.)”<sup>399</sup> While the 2008 USGBC study indicated 25-30 percent energy performance over the national average, there was nothing that indicated how newly constructed LEED™ buildings perform against non-LEED™ green buildings. Ironically, post occupancy energy performance has not been a component of LEED™ certification, rather, LEED™ assigns points on predicted energy performance.

Says one critic, “LEED™ buildings cost more, but whether in the end LEED™ processes provide a justifiable return on investment remains debatable.”<sup>400</sup> Yale University is examining that very question. While the university currently has a LEED™ Silver equivalent goal, they are trying to determine the value of LEED™ certification on campus building projects. Reiterating the common criticism of LEED™, university planner Laura Cruickshank quips, “The points are not equal to saving the planet,”<sup>401</sup> In fact, Yale believes it focuses more directly on greenhouse-gas reduction than LEED™.

#### *It Detracts from the Real Goal*

Even LEED™ advocates caution about the risk of point chasing, when certification becomes more of the goal than building performance. Schendler and Udall define this as “LEED™ brain” – or what happens when the potential PR benefits of certification begin driving the design process.

“Unfortunately, if you know how to scam LEED™ points, you can get the PR benefits without doing much of anything for the environment.”<sup>402</sup> Points should have more value. By seeking out the “easy” points, you do not necessarily ensure the highest levels of building performance.<sup>9</sup>

Skeptics point to the multi-billion dollar industry that has arisen from LEED™. Argues Anya Kamenetz,

Once a small operation with seven paid employees, [management of the LEED™ rating system] now fields a 116-member staff and earns 95 percent of [the USGBC’s] \$50 million annual budget...certification has been a gold mine for the nonprofit organization...The business case isn't just that green building saves money on energy. It's that LEED certification sells buildings to high-end clients and governments, gets architects and builders sparkling free publicity, and creates a hook for selling new products, materials, and systems to builders. It's a whole new commercial ecosystem.<sup>403</sup>

The larger issue, of course, is whether the focus on LEED™ certification is distracting us from the fundamental goal of designing more sustainable buildings. The 2008 USGBC report provided evidence of 25 - 30 percent energy savings in LEED™ buildings versus the national average. Apart from the fact that the study was not conducted by an outside party, is 25 – 30 percent enough? The Architecture 2030 challenge encourages architects and builders around the world to target a performance standard of 50 percent of the regional or national average.<sup>404</sup> The ultimate goal, of course, is carbon neutral by 2030. Says Kamenetz, “LEED™ began with the goal of getting attention for energy-efficient building...now that it is dominant in the marketplace, it could be adjusted to better reflect--and exploit--its newfound power.”<sup>405</sup>

#### *Will LEED become redundant?*

The push to move beyond LEED™ has already begun. Architecture 2030 promotes a goal to build at carbon neutral by 2030. The American Institute of Architects 2030 Commitment is also a voluntary program for members and others to advance AIA’s goal of carbon neutral buildings by the year 2030.<sup>406</sup> The American College & University Presidents Climate Commitment recognizes the need to reduce the global emission of greenhouse gases by 80 percent by mid-century at the latest<sup>407</sup> In the future, government requirements may demand more of us. As Bob Kitamura says, “Within 5 years, this will be a matter of fact. The question won’t be LEED™ Gold, it will be what else can I do?”<sup>408</sup>

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<sup>9</sup> It is interesting to note, however, that Schendler and Udall admit that despite these flaws, LEED™ can be a way to facilitate regulatory approvals, appease the public, and get free press.

## **Addressing the Criticism**

LEED™ Version 3.0 launched on April 27, 2009. The great hope among practitioners is that it will become more flexible and responsive to some of the criticisms mentioned above. Indeed some of the improvements include the re-weighting of credits for things like predicted energy performance and regionalization. Previous LEED™ versions will be consolidated and a more streamlined online accreditation process will be added.<sup>409</sup>

If LEED™ Version 3.0 is successful in addressing many of its criticisms, the next evolution of LEED™ may gain an even stronger foothold in the green building movement. Indeed, the USGBC views Version 3.0 as part of a continuous improvement cycle.<sup>410</sup> Says Jerry Yudelson, “While I don’t expect the LEED™ system to disappear anytime soon, I do expect that it will become more flexible and even more embedded in building codes and standard practices of architects, engineers and builders. In that way, the USGBC’s goal of market transformation of the building industry will see its full realization.”<sup>411</sup>

Despite its criticism, it is difficult to ignore the fact that LEED™ has become the dominant standard when it comes to the green building movement. While still only a small percentage of built structures are LEED™ certified, it is important to look at the trend to adopt LEED™ certification, as evidenced by its exponential growth in market share. Who knows? Perhaps LEED™, which was designed to be incremental, will actually be the force that drives us toward more carbon neutral buildings?

## **The Marketability of LEED™**

Obviously, there are many approaches to building green. There are also a variety of options to market the benefits of green to build on an institution’s reputation around sustainability. With these alternatives, why go with LEED™? LEED™ is perceived as the gold standard of green building rating systems among practitioners, but does that translate to a broader audience? For those not convinced by the power of LEED™’s role as a credible third party verification system, the argument to adopt LEED™ may just hinge on the ability to prove that LEED™ is, indeed, marketable. The term “marketable,” most commonly defined, means “in demand.”

LEED™ registrations and certifications doubled in 2007 compared to the previous six years and in 2008 they doubled those of the previous seven years.<sup>412</sup> With growth in the adoption of LEED™

and ever increasing media attention, there is a sense that the LEED™ brand is a marketable one. In a recent article in Grist Magazine, Ted Smalley Bowen succinctly captures this impression:

A small but high-profile list of building projects certified under LEED™ has attracted abundant media attention and generated significant buzz within the building community and beyond. LEED™ is also rapidly picking up endorsements from businesses, state and local governments, and federal agencies, and accrediting a fast-growing number of building-industry professionals.<sup>413</sup>

In commercial markets, LEED™ certified buildings add value. According to a corporate real estate survey by Jones Lang LaSalle and CoreNet Global, approximately “80 percent of corporations now consider sustainability a ‘near-term’ business issue and are willing to pay a premium to be green.”<sup>414</sup> In some markets, they are the first to rent and, in fact, there are not enough LEED™ certified buildings to keep up with demand. NAI BT Commercial in San Francisco created “RealGreen Index” to provide quarterly updates of LEED™ Certified retail and office properties in San Francisco and Oakland, complete with LEED™ rating.<sup>415</sup> J.K. Dineen of the San Francisco Business Times writes, “At a time when nearly every office building under construction has applied for Leadership in Energy and Environmental Design certification, the RealGreen Index demonstrates how few spaces and structures have achieved the designation thus far. As of now, the fully LEED™-blessed buildings have no vacancies”<sup>416</sup> While demand may certainly reflect the limited number of LEED™ certified buildings, and may be driven by the anticipated savings in energy costs, it is important to note that, to these companies, LEED™ represents something of value.

There is also tangible evidence of the benefits of marketing LEED™, based on additional news coverage. Says one industry professional, “The impact of building green and the LEED™ Gold level certification has created local and national press in newspapers, trade magazines and TV that has truly distinguished us in the marketplace and provided us with free advertising and marketing exposure that we could not have afforded. This awareness has impacted our marketing and community relations well beyond our expectations.”<sup>417</sup> Press coverage is an affordable way to advertise. According to case studies posted by the Rocky Mountain Institute, “The media is generally interested in sustainable construction and will promote projects.”<sup>418</sup>

Of course, LEED™ may only be attractive in certain markets. San Francisco, known for its progressive stance on sustainability, may find they have developed a greater awareness among consumers on the benefits of sustainable practices. For those who embrace LEED™, it is important to be reminded that recognition of the LEED™ brand may not be widespread. In Sacramento, real estate broker Tom Auger finds that, in the private sector, LEED™ certified

buildings must be accompanied by education. For one LEED™ office building, “the property's prestigious LEED™ tag is being received by an audience somewhat unfamiliar with green buildings and funny eco-friendly real estate acronyms.”<sup>419</sup> While leasing has been strong, it has not been instantaneous. Says one reporter, “The apparent green gap between the two Northern California cities belies the mere 100 miles that separate them and illustrates the geographic limitations of LEED™, even as the popularity of the green building rating platform has skyrocketed.”<sup>420</sup>

In private markets, homeowners also see value. In *The Green Movement and Condominiums*, Rick Gorka professes that green buildings are proving to be marketable. “A LEED™ certification,” says Gorka, “is assurance that concern for the environment was practiced in every discipline associated with the design and build of the project. Environmentally aware buyers are interested in green buildings, knowing that the costs of long term ownership will be reduced through lower energy costs.”<sup>421</sup> Even Zillow.com has a LEED™ index, comparing LEED™ home value index against the national home value index. LEED™ current value index is \$202,500 compared to the national home value index of \$199,981. This represents a one year increase of \$49,500 for the LEED™ home value against a \$25,979 decline in the national home value.<sup>422</sup>

For professionals in the building industry, experience in sustainable building offers a competitive edge. “It’s true that ‘if you build it they will come,’ says Architect John Echlin. “Our focus on sustainability has helped our business.”<sup>423</sup> Many industry professionals are seeking out LEED™ projects in order to include LEED™ in their portfolio. Says one Crosscut.com writer, “The competitive edge of builders and architects has embraced LEED™ certification as just another selling point.”<sup>424</sup> A record number of individuals are also seeking qualifications as LEED™ Accredited Professionals (AP), the experts who help steward projects through the LEED™ certification process. According to the USBGC’s Northern California Chapter, over 70,000 individuals have registered to take the LEED™ AP exam since March 27th, 2008.<sup>425</sup>

What does all of this mean for institutions of higher education? Increasing awareness and adoption of LEED™ in certain market sectors may spill over to the general public. The LEED™ brand and what it represents may become more important to future student and faculty recruitment as well as to potential donors. To the well-educated, value-oriented and environmentally aware consumer, LEED™ may become a necessity. If the decision-makers in corporate America are opting for LEED™ buildings, will that influence their philanthropic decisions when it comes to capital campaigns?



As seen in Chapter Five, green building professionals and universities are already partnering around LEED™ projects. Project architects at CSU Fullerton have provided LEED™ services pro-bono in order to gain experience in the LEED™ certification process. At UCSB, approximately \$500,000 worth of green products were donated to help the Bren School achieve LEED™ Gold. Over 8,000 tours of the Bren School have been conducted since its completion. On each tour, those products get recognized. These partnerships provide a win-win scenario: it is a successful way for firms to market their products and services and a significant opportunity for cash strapped institutions to realize sustainable construction goals.

Has LEED™ attracted funding? For the Bren School at UCSB, LEED™ was quite marketable for vendors of green products and services. They also received \$1 million post construction for an outdoor space adjacent to the building. Says Jennifer Deacon, “The donor was thrilled to be a part of the facility with the greenest lab in the world.”<sup>426</sup> Richard Bowen of Northern Arizona University (NAU) says that NAU uses LEED™ as a fundraising tool. The university’s new W.A. Franke College of Business earned a LEED™ Gold. “Our College of Business,” says Bowen, “received \$25 million from William Franke because he was looking for an M.B.A. program that was teaching values, not just finance.”<sup>427</sup> Franke had no other connection to NAU. NAU’s current goal is the renovation of the Performing Arts Building. Their goal? A carbon neutral campus.

Mark Maxwell of UC Merced provided an example about a donor to their recreation center. The donor was very excited about the green efforts and wanted to be a part of Sustainability Day, when the LEED™ buildings were to be dedicated. The university stopped planning the event until the recreation center was rated.<sup>428</sup> Colin Donahue of CSU Northridge said that while they did not receive any specific donor funding for LEED™, the reason they pursued LEED™ documentation is that they believe it makes the project more high profile and that it will eventually pay-off with one or more potential donors.<sup>429</sup> The Green Music Center at Sonoma State is not seeking LEED™ certification, rather, it markets its ability to meet the Title 24 Energy Standard of 2001.<sup>430</sup> Fundraising for the building continues.

During the time of this writing, Cal Poly earned its first LEED™ certification. The LEED™ EB Silver plaque now hangs on the outside of the Center for Science and Mathematics Faculty Office Building. The story was immediately picked up by the local press.<sup>431</sup> Would the story receive the same response if the message was “come see our green building?”

## Do We Need LEED™ to Succeed?

Outside of the anecdotes above, this author could not find enough examples of donations that were driven by the LEED™ rating to offer a statistically significant sample size that would definitively prove that LEED™ is attractive to donors. In the case of the anecdotal evidence, I could not ascertain whether the green message would have been just as marketable as the LEED™ message. While the number of LEED™ certified projects on campuses is growing, the reality is that only a minority of universities have LEED™ certified new construction projects. For those who have adopted LEED™, I found no evidence that the institutions proactively linked their sustainability efforts with their PR efforts to capitalize on that investment.

There is a strong sense, however, that the LEED™ brand is marketable and that recognition of LEED™ and what it represents will continue to increase. “Overnight, LEED™ has become a dominant brand, like Nike in athletic shoes or Dell in personal computers.”<sup>432</sup> In explaining the need for LEED™, Dr. Malcolm Lewis said:

As it is evolving in the marketplace, the brand value of the LEED™ rating is becoming a distinct benefit in its own right. Having a LEED™ certified building connotes environmental leadership and stewardship. For some non-profit organizations, a LEED™ rating for new facilities has become a fund-raising tool, as it appeals to certain sophisticated and environmentally aware donors. For institutions such as museums, schools and libraries, the LEED™ rating raises awareness of the building’s sustainable design features and thereby enhances the pedagogical mission of the facility. The LEED™ rating has even become a source of “bragging rights” as organizations seek higher ratings for their facilities.<sup>433</sup>

In a survey conducted by this author, I found that campus sustainability and advancement leaders overwhelmingly perceived LEED™ as marketable. While the survey includes just a small sampling, only 2 of 29 respondents said that LEED™ did not matter when marketing to donors. Twenty-two of the 29 supported the adoption of LEED™ certification when the intent is to market to donors and 5 replied that “it depends on the audience” (See Appendix II). While the survey was obviously targeted to individuals with sustainability awareness, their observations are worthy of consideration:

- Bob Kitamura, Director of Facilities Planning & Capital Projects, Cal Poly: “Cal Poly should be a part of LEED™; it is more marketable and you have to go with something everyone knows. But LEED™ is difficult; not everything fits into a box. It is [also] tricky marketing LEED™ – you have to balance expectation versus reality. Donors may expect PVs, but you can only use them on particular buildings.”<sup>434</sup>

- Jennifer Deacon, Asst Dean of Development, Bren School, UCSB: Green buildings carry a clearly understood message and LEED™ and the logo are identifiable. You have to know what green buildings are to receive the marketing benefits. Nowadays – donors would be hesitant to invest in a school that isn't green. [When marketing to donors], the building has to be certified with a recognized certification program and LEED™ is recognized industry wide.<sup>435</sup>
- Frank Whitlatch, Associate VP Marketing & Communications, Humboldt State University: "LEED™? Yes! It is the only one that people recognize. The CSU rating is a waste of time and resources. Why duplicate?"<sup>436</sup>
- Richard Bowen, Associate VP for Economic Development, Northern Arizona University: "NAU's College of Business was a good program; after the new building went LEED™ Gold, enrollment doubled. Nothing changed in curriculum, but change was perceived. And it changes the way the school thought about itself. After the engineering building went LEED™ Gold, enrollment increased dramatically. Without any changes to the curriculum, it is now listed as one of the Top 25 in US News and World Report."<sup>437</sup>
- Stephanie Wanek, Asst Dir. of Development, ATLAS Institute, University of Colorado, Boulder: "When they first started designing the ATLAS Building, LEED™ wasn't as heard of. The LEED™ Platinum status absolutely raises interest and funds."<sup>438</sup>
- Mark Maxwell, Asst Project Mgr, Physical Planning Design & Construction, UC Merced, "Title 24, the building industry standard, gets you to some shade of green, but LEED™ is the campus standard...LEED™ pays for itself. We put it in all of our brochures and it excites students – they want to be a part of it."<sup>439</sup>
- Cassie Carter, Director of Advancement, COSAM, Cal Poly: "The donors for the Center for Science and Mathematics are more interested in the program aspects of building."<sup>440</sup> (She believes that LEED™ is marketable to certain donors, for example the more environmentally conscious, and is now writing grants for green funding).
- Joel Neel, Associate Director, Facilities Planning & Capital Projects, Cal Poly: "Do we need LEED™? Yes, if we are asking outside folks for money – it proves you have done it; it adds credibility. LEED™ carries with it a huge caché; they are brilliant at marketing themselves."<sup>441</sup>
- Phil Bailey, Dean, COSAM, Cal Poly, "The [Center for Science and Mathematics] needs to be LEED™ certified. We need third party verification – we can't tell donors 'it is green' just because we say it is green. The president just needs to say 'LEED™' and it will happen."<sup>442</sup>
- Perrin Pellegrin, Campus Sustainability Coordinator, UCSB: "You need third party verification – it's like auditing a class and not taking the tests." LEED™ also offers additional work on energy modeling and water usage – which we need to be doing anyway, especially in California."<sup>443</sup>
- Hamid Azhand, Director, Capital Planning, Design & Construction, CSU San Bernardino (Their Palm Desert campus is aiming for LEED Gold/Platinum for the Health Science Building): "LEED™ certification gives a political boost - Gold is big thing for us – especially since it is donor funded. LEED™ means a lot to students, faculty and the campus community. LEED™ Platinum is more marketable because it is difficult to achieve. Projects have gotten money because it's green – it's a hot issue. You need LEED™ to be accepted as green."<sup>444</sup>

- Linda Kristensen, Dean of Advancement, CAED, Cal Poly, San Luis Obispo, “LEED™ is important in terms of big industry; everyone is asking them to build LEED™ – they need LEED™ projects in their portfolio. LEED™ could be marketable – we need to match up with what is happening in the industry. We are not as visionary as we need to be.”<sup>445</sup>
- Patrick Jacobs, Director of Facilities Planning, CSU Bakersfield: “The gold standard is LEED™. For all its problems, people know what it is. ‘Green’ is a bit more nebulous, LEED™ is important in getting money.” (He believes that new sources of funding for green will require LEED™).<sup>446</sup>
- Tanya Kiani, Dean of Advancement, CAFES, Cal Poly: “Is LEED™ more marketable? It depends on the audience. Talk of sustainability is VERY compelling to donors, but many don’t even know about LEED™.”<sup>447</sup>
- Scott McNall, Exec. Director, Institute for Sustainable Development, Chico State: “Does it need to be LEED™? No. Not many [people] know what LEED™ certification really is. They do know a unique building when they see it, and are impressed by all the special features. With LEED™, you have to explain what it is. Even for those who have heard of LEED™, there is still a need to explain the elements that go into the different LEED™ levels. The bottom line is we are trying to create buildings that are green, sustainable, renewable, healthy, etc.”<sup>448</sup>
- Pam McClure, Director of Advancement, OCOB, Cal Poly: “Overall, I don’t think it is important to go for LEED™. Business donors care more about the bottom line; the best value for the dollar. Most are just practical. But, for those who do care about green, they would want the best - and that would mean LEED™.”<sup>449</sup>
- Colin Donahue, Assoc. VP, Facilities Development & Operations, CSU Northridge: “LEED™ is certainly the most recognizable standard to the layman, but I don’t think it has to be LEED to be marketable. In a couple of years, it is very likely that there will be green standards built directly into the California Building Code. This would likely supplant LEED™.”<sup>450</sup>

The ratio of “Yes” responses to “No” or “It Depends” responses was comparable even when looking at respondents by their professional areas (facilities planning/services, advancement/marketing and sustainability coordinators). Only Jennifer Dean and Hamid Azhand, ventured an opinion on the additional marketability of LEED™ levels. In both cases, LEED™ Platinum was perceived to be significantly more marketable. As Platinum is more difficult to achieve, thought Azhand, it is not as common. That makes it more marketable.<sup>451</sup>

## Conclusion

As LEED™ enters its ninth year, the size of the organization, including the number of LEED™ projects, continues to grow. The reality, however, is that LEED™ certified buildings at present still only represent a small percent of new construction. While the education sector is the largest

adopter of LEED™<sup>452</sup>, public universities only represent approximately 19 percent of LEED™ certified projects.<sup>453</sup>

The small number of LEED™ certified buildings in higher education, coupled with the lack of evidence that the LEED™ was effectively marketed as a fundraising message, makes it challenging to quantitatively determine whether LEED™ certification equates to increased donations. This holds even truer for LEED™ Gold or Platinum buildings. Marketing (and for that matter fundraising), however, are more qualitative pursuits. For that reason, we must rely on the subjective area of anecdotal evidence and the educated guesses of experienced sustainability, communications, and advancement professionals.

There also remains a notion that green is just as marketable when speaking to constituents, whether it is students, parents, faculty or potential donors. Chico State emphasizes “green” buildings, sustainable practices, and the recognition they receive by their green awards – not LEED™. According to Scott McNall, that is sufficient to attract attention.<sup>454</sup> In addition, there is always the risk that choosing LEED™ certification will backfire, by turning off donors who deem it a waste of resources. Of course, a LEED™ plaque can be a conversation piece, offering another opportunity to educate others on the benefits of green buildings. It could also imply a leadership that isn’t actually there.

The adoption of LEED™ as a fundraising tool may depend on the audience; in other words, those who will be funding our building. While recognition of the LEED™ brand will inevitably rise as more building owners choose a LEED™ rating, LEED™ is not quite a universal household name. It is, however, marketable to certain audiences such as green product vendors and providers of green services, energy companies, companies that adopt LEED™ platforms, environmentally aware and/or active alumni, and public grant offices and private foundations. For these audiences, I would venture to say that third party verification is essential and that LEED™ is by far the name that will sell. When weighing the costs and benefits of adding LEED™ as a line item, it is important to factor in the amount of funding and resources that may be available from these vital players.

It is also important to stay ahead of the curve. In a presentation of The Hartman Group’s market survey on sustainability, Kate Perringer emphasized that “while only 19 percent of core consumers look at the global impact of their purchasing decisions, it’s important for companies to follow these core consumers ‘to stay ahead of the curve,’ because trends trickle down from this group to the broader market.”<sup>455</sup> Richard Bowen showed us how the LEED™ buildings at NAU

enhanced the school's reputation and changed the way the students thought about the programs.<sup>456</sup> Staying ahead of the curve is important to alumni as well. Pride in their alma mater may easily translate to donations from those who have the ability and interest in sustainable practices. It also represents leadership and innovation. In a 2002 UC Berkeley alumni survey, the top reasons cited for giving included the university's influence on the life of the alumnus and the "opportunity to fund innovative programs, address urgent needs, and take advantage of unforeseen opportunities."<sup>457</sup> In fact, donors in general tend to give to organizations who are seen as a leader and who provide them with a sense of true partnership in making something good happen.<sup>458</sup>

Of course, NAU, which still uses the LEED™ rating system, has moved beyond LEED™ conceptually. The campus has set a goal of campus neutral, starting with a dedicated field on the south campus for solar panels.<sup>459</sup> At this current moment in time, when LEED™ holds the highest market share in green certification and continues to gain momentum, it is easier to make the case for the adoption of LEED™. Institutions can capitalize on a brand that is growing in popularity. In future years, when public policy or consumer demand may make green buildings more of the norm, the value of the LEED™ brand may diminish. On the other hand, LEED™ may just be guiding the next generation of green.

Either way, if the LEED™ name is adopted, an effective communication strategy is vital if the project is to capitalize on the LEED™ name for funding opportunities. First, there is the importance of transparency. Joel Neel warns that we need to be careful in positioning a level when communicating our green goals. LEED™ Platinum is not an easy hurdle and projects do not always function the way you want them to. For example, if green energy is our target, will we have enough green energy to commit to each project? Will the mechanicals prove to be too costly or challenging? Will the space allow for natural daylight or sufficient natural daylighting as a percent of square footage to earn the desired LEED™ credits?<sup>460</sup> When marketing LEED™ goals, we need to set realistic expectations and be forthright in our communication with constituents.

Second, not even the well-deserving project or institution will be recognized for its efforts if it does not have a strong communication strategy and team. The most successful LEED™ projects will have the most effective method for marketing sustainability. According to Jerry Yudelson, "The need for marketers who believe in the benefits of sustainable design to make sure that their staff knows how to present sustainable design in a persuasive way, have the data they need to justify such an approach and understand the budgetary and staff implications before the project begins."<sup>461</sup>

Joel Neel, however, cautions about promising more than can be delivered and says that you need to be careful in promising a LEED™ level.<sup>462</sup> In Marketing Green Building Services, Jerry Yudelson recognizes that professionals face problems when promoting green buildings, primarily the challenge of combating the perception that green buildings cost more when addressing an audience that is heavily concerned about initial cost increases.<sup>463</sup> When marketing sustainable design, he advises, you need to provide the following<sup>464</sup>:

- Case study data, with solid cost information, including initial cost increments
- Comparative cost information within and across building types, as to the full costs of LEED certification, including documentation
- Demonstrable information on the benefits of green buildings beyond well-documented operating cost savings from energy and water conservation
- Anecdotal stories, by both practitioners and building owners, about the costs and barriers to completing LEED-certified projects.

Ultimately, the choice to adopt LEED™ will depend on the project leaders who will be weighing the costs and benefits to determine whether the perceived marketability of LEED™ will translate to funding for their capital project. The momentum of LEED™, however, is hard to ignore and shows no sign of slowing down. LEED™ has proven itself to be an effective method for greening buildings incrementally, each level adaptable to project goals and budgets. This means for projects slated for construction in the near-term, the benefits of LEED™ certification should seriously be considered and, if adopted, proactively marketed. Of course, for the CSU campuses with an imminent new benchmarking protocol, CSU-PER, this could mean redundancy of methods and additional costs.

In the future, LEED™ may drive us to higher levels of sustainability or it may become redundant. What should not get lost in the debate over LEED™, however, is the overarching goal that is clearly more necessary and infinitely more compelling: the goal of carbon neutral for all new construction in higher education and beyond. If LEED™ can help us get us there, we should consider paying for the paperwork.

## **Chapter Eight**

### **Conclusion:**

#### **Transforming the Funding Paradigm at Cal Poly**










In the past few years, approximately 1.5 million square feet of new buildings have been added to the Cal Poly campus – representing roughly 26 percent of the campus facilities<sup>465</sup>. Despite the implications this growth has on the campus carbon footprint, Cal Poly's new facilities have been constructed at "green basic" levels (equivalent to LEED™ certified levels or slightly below), and is only now, since the state and CSU mandates, designing at LEED™ Silver equivalent levels. While this is certainly commendable, the university is still challenged in building the type of high performance buildings that would truly make buildings more sustainable. The most commonly cited barrier is cost and lack of funding. The outcome, however, is not just driven by the funding model for capital projects. It is determined by the institutional practices, perceptions and values that influence decision makers.

My findings indicate that while there are limitations imposed by both the cost of green buildings and the state capital outlay process, other CSU campuses have succeeded where Cal Poly has not. In addition, best practices have been identified that, if adopted, can effectively reduce cost and provide alternative means of realizing a greener building. If the capital outlay process is not the primary obstacle, and if costs can be better managed, then perhaps Cal Poly's institutional perceptions and practices – attitudes about costs, the limited collaboration between units, rigid definitions of roles and responsibilities, limited focus on alternative revenue streams, unwillingness to pay for LEED™ certification – are limiting the university's capacity to build higher performing buildings. Sustainability is part of the conversation at Cal Poly, but what does this mean practically? Is it a primary value that is clearly defined by our leaders, embedded in our building practices, and commonly understood by the campus community, our alumni, friends, or the community-at large?



## Transcending the Funding Paradigm

### What are the barriers to green construction on the Cal Poly campus?

- **Cost?** 
- **Insufficient Funding?** 
- **Separation of Capital and Operating Budgets?** 
- **Integrated Design?** 
- **A Consistent, Streamlined Approach?** 
- **Experience?** 
- **Leadership? Values?** 
- **Capitalization on Alternative Resources?** 
- **Marketing?** 

**Figure 8-1: What are the Barriers to Green Construction?**

State bond funding is insufficient and unreliable, but some see it as a creative way to fund new infrastructure in a state the size of California (and we certainly miss it in times of recession). The separation of funding for operating and capital planning is a barrier, as it leaves no state funding for energy saving mechanisms on new structures, despite the state's emphasis on integrating life cycle analysis. The CSU funding formulae for capital projects could certainly be improved to incent and propel campus facilities to higher levels of sustainability; however, the CSU has taken a leadership role in many ways to support campuses in their effort to build green. It is not this collective funding model alone that poses the greatest impediment for Cal Poly. That exists closer to home. Many campuses in the UC and CSU were building more sustainably than Cal Poly even before the LEED™ Silver mandates and four CSU campuses have constructed LEED™ Gold buildings. At CSU San Marcos, a LEED™ Platinum building is in design. Can Cal Poly transcend the funding paradigm to form a campus sustainability paradigm?

With its move toward an integrated design approach and with the experience they continue to gain in designing to LEED™ Silver equivalent levels (and the LEED™ process itself), Cal Poly Facilities Planning will inevitably become more efficient in building at higher levels of LEED™.

Case studies show that integrated design and experience equate to lower overall costs. As a university, however, we need to think about our goal of high performance buildings more holistically, to be achieved not as separate units with distinct roles and responsibilities, but collaboratively as a team. The important work being done in Facilities Services to reduce GHG emissions should be integrated with Facilities Planning. As the need for alternative funding mechanisms will invariably increase, especially as we move toward higher levels of building performance, advancement should be a part of that team. The university needs to evaluate the current procedures and attitudes that pose a challenge for donations that fall outside standard practice; like gifts in kind, for these gifts are an inherent part of capital projects. In 2010, Cal Poly will be launching its next capital campaign. With approximately one-third of the goal focused on capital projects, facilities, advancement, and finance staff need to be working together to advance the sustainability goal while preparing for the more innovative ways that could make it happen.

Campuses with the greatest success in building green have attributed it to leadership. Their campus leaders have a clear vision and have made sustainable building goals a priority. With the finalization of the strategic plan, Cal Poly has an opportunity to put forth a bold vision for sustainability and a strategy for implementation. Will that goal remain nebulous or will "Lead in Sustainability" include specific green building goals?

To date, Cal Poly administrators have not supported the costs of LEED™ and the adoption of LEED™ certification remains project based. To establish LEED™ as a campus goal, advocates would have to convince decision makers that the benefits of LEED™, including the importance of third party verification and the potential marketability, outweigh the costs. As we are designing to LEED™ Silver anyway, it seems shortsighted to some to not capitalize on these potential benefits. The case for LEED™ would be strengthened with data on both the hard costs of LEED™ such as energy modeling (which are required anyway by current mandates) and soft costs (including evidence that LEED™ certification costs decline with experience).

The argument would also propose that LEED™ could be a part of the funding solution. As the most dominant green benchmarking standard, the LEED™ brand continues to gain market share and name recognition. With LEED™ Version 3 recently launched and the size of the USGBC budget at \$50+ million, it does not show signs of slowing down in the near future. Potential donors will know what the LEED™ brand means. In fact, prospective sustainability funders may deem third party verification a requirement. Finally, LEED™, if communicated effectively, may offer a competitive advantage. The adoption of LEED™ Gold or even Platinum goals for new construction will likely increase at institutions of higher education. The rating, however, would still be rare and, therefore, potentially marketable, particularly in higher education. It could also offer

a competitive advantage; enhancing the school's reputation as an innovative leader that cares about its societal impact.

If LEED™ Gold is used as a platform to attract donors, the message needs to be effectively communicated. As Cal Poly considers how it will position itself as the “21<sup>st</sup> Century Polytechnic,” the Cal Poly brand must be synonymous with sustainability. LEED™ can help articulate that message. Communication must also be transparent; the contingencies affecting a LEED™ Gold outcome need to be clearly outlined. A LEED™ Gold building at the campus entrance would be a showcase for the university, a bridge to the community, symbolic of the university's commitment to sustainability, and an opportunity to educate others.

### **Advice for Future Study**

#### *Survey of Donors: The Marketability of LEED™*

The most convincing argument in support of LEED™ certification is data that supports the marketability of sustainability to donors. The marketability of LEED™ to commercial and private markets is evident by the increased demand for LEED™. A market assessment tool that is project specific could provide evidence of the fundraising benefits of LEED™ on university campuses. While I found some anecdotal evidence that LEED™ building projects attracted the attention of donors and documented the majority perception among 29 practitioners that LEED™ is necessary when marketing to donors, there is no quantifiable evidence that LEED™ equals donations. I could not locate a survey evaluating the marketability of LEED™ among potential donors or anything comparable for either non-profits or higher education. A survey of university donors and constituents (alumni, parents, friends, faculty/staff, and industry) could provide valuable information on the value of sustainability, recognition of the LEED™ brand, and the relative importance of both when making philanthropic decisions. Data should also be collected on giving patterns among providers of green products and services as well as the requirements of environmental grant makers.

#### *Existing Buildings*

While the purpose of this thesis was to examine green practices for new construction, the existing infrastructure clearly represents a larger problem. For Cal Poly, the majority of facilities are older buildings that consume a lot of energy and water and produce high levels of greenhouse gases. Elvyra San Juan asks, “When adding new buildings, how do are you reducing your carbon footprint? We must add renewables to all buildings.”<sup>466</sup> According to Dennis Elliot<sup>467</sup>, funding for retrofits is also insufficient. A financing alternative needs to be identified to support the staffing, energy modeling costs, and mechanics required to make the existing infrastructure more

sustainable. To reduce the university's carbon footprint, the fundability and marketability study could be applied to existing infrastructure.

#### *Model for Other Campuses*

The long-term goal of transforming the funding paradigm is the hope that it could serve as a model for other public universities. While capital projects are currently in flux on the Cal Poly campus, and leadership may change, a logical next step is to document the journey to LEED™ Gold. This would include not only successful practices (which would hopefully include new measures), but ongoing barriers. In addition to dissemination to other universities, documentation would support a more standardized approach to high performance buildings. Cal Poly could be recognized as a leader in sustainability.

#### **Next Steps**

During the course of writing this thesis, the bottom dropped out on the U.S. economy, California's deficit rose to \$42 billion<sup>468</sup>, the propositions to replenish California's budget with borrowed money failed, and Cal Poly now anticipates a \$34 million shortfall in the fall of 2009.<sup>469</sup> The state's credit is in question, slowing down the sale of bonds which, like it or not, fund the majority of capital project costs on CSU's campuses. Perhaps the conversation about the LEED™ brand or levels of sustainability in building seems superfluous. On the other hand, perhaps the timing is right.

As sustainability becomes the theme of the day, what better time to capitalize on the good work being done by communicating its message? In the three years since the state and CSU mandate of LEED™ Silver equivalent, the Cal Poly's Facilities Planning team has gained experience in constructing LEED™ Certified, Silver and high Silver buildings, has moved toward an integrated design model, and has begun to develop relationships in the industry resulting in increasingly more sustainable buildings with each passing year. Each has been proven to reduce cost. Cal Poly seeks to finalize its strategic plan, which includes "Lead in Sustainability" as a priority goal. What better time to define the objectives for green building and develop a sustainability master plan for infrastructure with clear roles and responsibilities that include the fundraisers and communicators? We are also at a point in time when the LEED™ brand is gaining market share and name recognition. As long as we follow the LEED™ protocol, shouldn't we capitalize on the LEED™ name?

A strong case will need to be made to university decision-makers and alternative methods of financing capital projects need to be identified and supported. Cal Poly's strength has never

been its branding, and sustainability is no exception. The university has made tremendous progress in sustainable practices across the campus, but that message has not been prominent. At a time when the country is looking at the values of responsibility and impact of waste in perhaps a more critical way, achieving high performance buildings shows an abiding commitment to tax payers, constituents, and future generations. In the era of global warming, it should be an imperative.

Of course, one day the argument for or against LEED™ may and should be irrelevant. “Much of the green development that’s going on now is at the most basic level;” says architect Gail Lindsey, “it is really about doing less bad, attempting to slow down the damage. We need to move on to the restorative and regenerative levels – ultimately, make the place better than it was before.”<sup>470</sup> Pushed by their students, campus planners will not be waiting for the next LEED™ standard, they will be a step ahead. Jerry Yudelson speaks of the new wave of sustainable design primed to take hold on university campuses. “An example could be a carbon dioxide emissions mitigation system planning for a new university building, since many colleges and universities are responding at this time to student and faculty concerns about global warming.”<sup>471</sup>

Robin Suttell writes of USGBC founder David Gottfried’s advocacy of life beyond LEED™:

The notion of deep green moves beyond LEED and environmental-compliance issues and revamps the entire human lifestyle - affecting both life at work in commercial buildings and life at home in the residential setting. It’s about reducing reliance on automobiles and buildings becoming self-sufficient power plants, generating the power they need rather than turning to suppliers for generation. ‘Deep green,’ Gottfried says, is a ‘climate-neutral community or, even further, one that has a zero ecological footprint.’ It’s a complete shift in the way you live and work in the facilities you own, manage, and operate, and at home.<sup>472</sup>

In a presentation to the National Association of State Treasurers, California’s Deputy State Treasurer, Bettina Redway, and State Treasurer, Bill Lockyer, outlined their plans for a green government bond, starting with an initial goal that “all new government facilities in California built after 2030 should be carbon neutral.”<sup>473</sup> Says Lockyer, “To help government reach the net-zero target, all new government facilities in California – state, cities, counties, schools and colleges – should be “carbon-neutral” by 2030. Carbon-neutral buildings would operate without using any fossil fuel energy sources, and would meet all their power needs with renewable sources.”<sup>474</sup> While the green bond did not pass in fall 2008, it is important that this type of thinking remains among California’s leaders.

Some universities are already there. Colorado State University (CSU) President Larry Edward Penley announced his strategy to make CSU the ‘Green University.’ In his annual fall address,

Penley announced that “the University aims to be carbon neutral - reducing its greenhouse gas emissions through conservation and alternative energy sources - by 2020.”<sup>475</sup> Within two years of the announcement in late 2005 by president Richard Levin that Yale University would reduce its greenhouse-gas emissions by 43 percent by 2020, Yale has already cut emissions 17 percent. Well ahead of schedule, the university estimates another 17 percent by 2009.<sup>476</sup> Says Levin,

We’re showing it can be done, but our carbon savings are miniscule compared to what needs to happen...And even if you put all the educational institutions in the world together, it still doesn’t add up to much. The answer has to come from governments, and I think the major reason for doing this is to enlighten the public so that ultimately governments will get serious about it.<sup>477</sup>

President Levin is one of the signatories of the American College & University Presidents Climate Commitment, a commitment by institutions to take steps in pursuit of climate neutrality. Believing that higher education must rise to the challenge of global warming, signatories recognize the need to reduce the global emission of greenhouse gases by 80% by mid-century at the latest. “We believe colleges and universities must exercise leadership in their communities and throughout society by modeling ways to minimize global warming emissions, and by providing the knowledge and the educated graduates to achieve climate neutrality.”<sup>478</sup> All ten of the University of California schools and two California community college districts have signed the Commitment. Only five campuses in the California State University have signed, including Bakersfield, Chico, Monterey Bay, Cal Poly Pomona, and San Francisco. Cal Poly San Luis Obispo has not signed the agreement. The University can and should, however, continue to aim higher in meeting the challenges of global warming.

## APPENDIX I

### The California State University (Copy of New) Capital Outlay Estimate (Portion of Page 1)

CPD Project Number _____		<b>THE CALIFORNIA STATE UNIVERSITY</b>				Date: _____	
		<b>CAPITAL OUTLAY ESTIMATE (Form CPDC 2-7)</b>				Budget Year: <u>2010/11</u>	
		<b>Project Schedule/Duration</b>				CCCI _____	
		Project Started @ _____				EPI _____	
<b>Campus</b>	_____	Schematics Completed @ _____				Fund _____	
<b>Project</b>	_____	Preliminary Plans Completed..... @ _____				<b>New Const</b>	<b>Reno</b>
<b>Arch./Engr:</b>	_____	Working Drawings Completed..... @ _____				<b>Net Area</b>	_____
<b>Delivery</b>	<u>DESIGN-BID-BUILD</u>	Construction Started..... @ _____				<b>Gross Area</b>	_____
<b>Budget</b>	<u>BUDGET</u>	Construction Completed..... @ _____				<b>Efficiency:</b>	_____

	NEW CONSTRUCTION		RENOVATION		TOTAL	\$/sq.ft.
	STATE	NONSTATE	STATE	NONSTATE		
<b>BUILDING</b>						
A10 Foundations.....	\$					
A20 Basement Construction.....	\$					
<b>A SUBSTRUCTURE.....</b>	\$	\$	\$	\$	\$	#
B10 Superstructure(Vertical, Floor, & Roof).....	\$					
B20 Exterior Enclosure.....	\$					
B30 Roofing.....	\$					
<b>B SHELL.....</b>	\$	\$	\$	\$	\$	#
C10 Interior Construction.....	\$					
C20 Stairways.....	\$					
C30 Interior Finishes.....	\$					
<b>C INTERIORS.....</b>	\$	\$	\$	\$	\$	#
D10 Conveying Systems.....	\$					
D20 Plumbing Systems.....	\$					
D30 HVAC Systems.....	\$					
D40 Fire Protection Systems.....	\$					
D50 Electrical Systems.....	\$					
D50so Telecom.....	\$					
<b>D SERVICES.....</b>	\$	\$	\$	\$	\$	#
E10 Group I Equipment.....	\$					
E20 Furnishings (i.e.Group I casework).....	\$					
<b>E EQUIPMENT AND FURNISHINGS.....</b>	\$	\$	\$	\$	\$	#
F10 Special Construction.....	\$					
F20 Selective Demolition (Excluding hazmat removal).....	\$					
F2020 Hazardous Material Removal.....	\$					
F30 Sustainable Building Measures.....	\$					
<b>F SPECIAL CONSTRUCTION &amp; DEMOLITION.....</b>	\$	\$	\$	\$	\$	#
<b>Z10 GENERAL CONDITIONS.....</b>	\$	\$	\$	\$	\$	
<b>1. TOTAL BUILDING.....</b>	\$	\$	\$	\$	\$	#
G1020 Site Prep & Site Improvements.....	\$					#
G3040 Utilities (Civil, Mechanical, Electrical & Telecom).....	\$					
G2050 Landscape Budget (design fee inc. in 6a & 6b).....	\$					
G30 Sustainable Site Measures.....	\$					
G60 Other Site Construction.....	\$					
<b>2. TOTAL SITEWORK.....</b>	\$	\$	\$	\$	\$	
<b>3. TOTAL BUILDING AND SITEWORK.....</b>	\$	\$	\$	\$	\$	
<b>4. Escalation to Midpoint of Construction.....</b>	\$	\$	\$	\$	\$	
<b>5. TOTAL CONSTRUCTION (Items 3 &amp; 4).....</b>	\$	\$	\$	\$	\$	

## APPENDIX II

### Survey on Campus Green Building Practices, by professional area (1 of 3)

		Mary Alice Avila, Project Mgr Facilities Planning & Capital Projects, Cal Poly	Hamid Azhand, Director, Capital Planning, Design & Constr., CSU San Bernardino	Jaleh Behrouze, Architect/Constr. Specialist, San Jose State	Ashok Bhatt, Project Manager, Facilities Planning CSU Bakersfield	Colin Donahue, Assoc. VP, Facilities Development & Operations, CSU Northridge	Patrick Jacobs, Director of Facilities Planning, CSU Bakersfield	Robert Kitamura, Director of Facilities Planning & Capital Projects, Cal Poly	Greg Krietsch, Director Facilities Planning & Real Estate, Humboldt State	Ray Morrison, Director, Facilities Planning, Design & Constr., Cal Poly Pomona	Melody Mafel, Director, Design, Construction & Maintenance, CSU Stanislaus
1	Is green design considered?	Yes	Yes	Mostly	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	What standard?	LEED Certified (equiv) - or 1 pt shy	LEED Gold & Platinum goal	LEED Silver base, Platinum. Goal	LEED Silver (equiv)	LEED Silver	LEED Silver (equiv)	LEED Silver (equiv)	LEED Silver, Gold, Platinum	LEED Silver (equiv)	LEED Silver (equiv) and/or CSU-PER
3	How was/were the project(s) funded?	Private	State Private	Private	State	State Housing	State	State Hybrid Private Housing	State	State Housing	State
4	Any sense of additional costs due to green over conventional budget?	.06% over	Gold & Platinum adds cost	Varies by project & features	LEED Silver w/in conv. Budget	2-3% over for higher levels	LEED Silver w/in conv. Budget	More for green roof		Varies by project & Features	Moving to base budget with CSU- PER
5	Is it marketable?	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Depends on market	Yes	Yes
6	Is it marketable to funders? Examples?	Donor not interest- ed at first	Yes	Don't know	N/A	Yes - Several donors have shown interest	N/A	Probably	Don't know	Not yet	Don't know
7	Is it proactively marketed?	N/A	Yes	Yes	No	Some; Would like to do more	No	No	Yes	Some; Would like to do more	Yes
8	Does it have to be LEED? If so, what Level?	Yes	Yes, Platinum	Yes	Yes	No	Yes	Yes	Depends	Yes	Depends
9	Who pays for LEED certification?	N/A	Univ.	Within Project Budget	N/A	Private funding	N/A	N/A	State	Within Project Budget	Univ.



## APPENDIX II (cont'd)

### Survey on Campus Green Building Practices, by professional area (2 of 3)

	Mark Maxwell, Asst Project Mgr, Physical Planning Design & Construction, UC Merced	Joel Neel, Assoc. Director, Facilities Planning & Capital Projects, Cal Poly	Barbara Queen, Project Architect, Facilities Planning & Capital Projects, Cal Poly	Michael Smith, Director of Design and Construction, CSU Fullerton	Anya Spear, Campus Planning Analyst, Campus Planning & Development, CSU Monterey Bay	Dennis Elliott, Manager of Engineering & Utilities, Cal Poly	Mark Hunter, Executive Director, Facility Services, Cal Poly	Scott McNall, Exec. Director, Institute for Sustainable Development, Chico State	Perrin Pellegrin, Campus Sustainability Coordinator, UC Santa Barbara
Is green design considered?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
What standard?	LEED Silver	LEED Silver	LEED Gold goal	LEED Cert., Silver or better	LEED Silver (equiv)	LEED Silver (equiv)	LEED Silver (equiv)	LEED Silver, Gold	LEED Silver, Gold, Platinum
How was/were the project(s) funded?	State	State Hybrid Private Housing	Hybrid	State Private Now within Project Budgets	State Univ Foundation Private	N/A	State Hybrid Private Housing	State Student Fees Hybrid	State Hybrid
Any sense of additional costs due to green over conventional budget?	LEED Silver w/in conv. Budget	Gold & Platinum adds cost	W/in conv. budget with exception of green roof	Not nec. More expensive - Varies by project	Varies by project	Not nec. More expensive - Varies by project	More expensive	No	Silver: 1-2% more, Gold: 3-4%, Platinum: 5%
Is it marketable?	Yes	Yes	Yes	Yes	Yes	N/A	Yes	Don't know	Yes
Is it marketable to funders? Examples?	Yes	Don't know	Don't know	Yes	Probably	N/A	Don't know	Don't know	Yes - Bren school
Is it proactively marketed?	Yes	Don't know	No	Yes	Yes	N/A	No	Yes	Yes
Does it have to be LEED? If so, what Level?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Depends
Who pays for LEED certification?	Within Project Budget	N/A	Private funding	GIK	Univ.	N/A	N/A	Within Project Budget	Within Project Budget

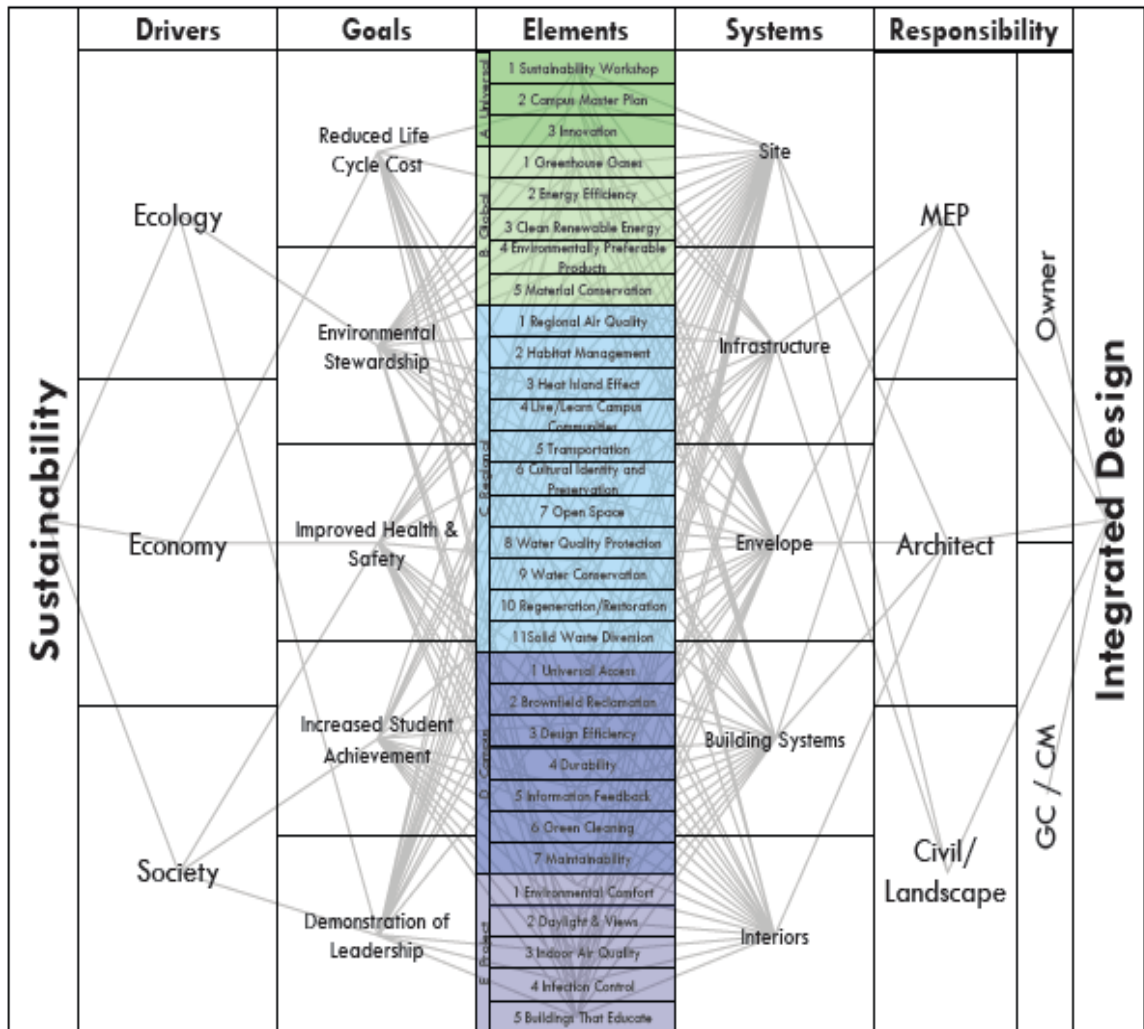
## APPENDIX II (cont'd)

### Survey on Campus Green Building Practices, by professional area (3 of 3)

	Jennifer Deacon, Asst Dean of Development, UC Bren School, Santa Barbara	Cassie Carter, Director of Advancement, COSAM Cal Poly	Tanya Kiani, Dean of Advancement, CAFES, Cal Poly	Linda Kristenson, Dean of Advancement, CAED Cal Poly	Pam McClure, Director of Advancement, OCOB Cal Poly	Stephanie Wanek, Asst Dir. of Development, ATLAS Institute, CU-Boulder	Frank Whitlatch, Assoc.VP, Marketing & Communications, Humboldt State	Richard Bowen, Assoc. VP for Economic Development, Northern Arizona University	Bettina Redway, Deputy Treasurer, Office of California State Treasurer	Elvira San Juan, Asst Vice Chancellor, Capital Planning, Design & Construction, CSU
Is green design considered?	Yes	Yes	N/A	Yes	N/A	Yes	Yes	Yes	N/A	Yes
What standard?	LEED Silver, Gold, Platinum	LEED Gold (equiv)	LEED Silver (equiv)	LEED Silver (equiv)	LEED Silver (equiv)	LEED Silver, Gold, Platinum	LEED Silver, Gold, Platinum	LEED Silver, Gold, Platinum + carbon neutral goal	N/A	LEED Silver (equiv)
How was/were the project(s) funded?	State	Hybrid	Mostly private	Private	N/A	Hybrid	Don't know	State	N/A	N/A
Any sense of additional costs due to green over conventional budget?	2% over (LEED goal added at 50% phase)	Higher cost - green roof	More for green roof	More for green roof	N/A	Gold & Platinum adds cost	Don't know	Initially 10% over, now none	N/A	More expen- sive -3% line item in budget
Is it marketable?	Yes	Yes	Yes	Yes	Depends on audience	Yes	Yes	Yes	N/A	
Is it marketable to funders? Examples?	Yes - \$250 GIK; \$1M cash	Doesn't seem to be for this project	Yes - Rabo- bank	Depends on audience	Depends on audience	Yes	Don't know	Yes - \$25M Gift	N/A	
Is it proactively marketed?	Yes	No	Yes	No	N/A	Yes	Yes	Yes	N/A	Yes
Does it have to be LEED? If so, what Level?	Yes, Platinum	Yes	Depends	Yes	Depends	Yes	Yes	Yes	N/A	N/A
Who pays for LEED certification?	Chanc- ellor's office	N/A	N/A	N/A	N/A	Within Project Budget	Don't know	State	Univ.	N/A

## APPENDIX III

### CSU Program for Environmental Responsibility, September 2008



<http://www.calstate.edu/cpdc/sustainability/documents/Elements.pdf>

## ENDNOTES

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- <sup>1</sup> The California State University, <http://www.calstate.edu/gradprograms/campuses/slo.shtml> (accessed 10 November 2008).
- <sup>2</sup> Facility Spreadsheet. Rev 2/18/2009, Cal Poly Facilities, [http://www.facilities.calpoly.edu/spacefacility/facility\\_table.xls](http://www.facilities.calpoly.edu/spacefacility/facility_table.xls) (accessed 3 May 2009).
- <sup>3</sup> Robert Kitamura, Director, Facilities Planning and Capital Projects, Cal Poly San Luis Obispo, in person interview with author, (2 February 2009).
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